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JANUARY, 1911

Canadian Journal of Public Health

The Public Health Journal

INCORPORATING THE THERAPEUTIST AND SANITARY ENGINEER

Vol. II

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SECTION OF STATE MEDICINE,
ACADEMY OF MEDICINE, TORONTO, ONTARIO.

Who are strongly advocating changes in State and Municipal Public Health Methods and Appointments.

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The

Public Health Journal

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VOL. II JANUARY, 1911 No. 1

Special Articles

PRESENT-DAY CONDITION OF HUMAN TEETH

By W. CECIL TROTTER, B.A., D.D.S.

The condition of the human teeth to-day, the world over, is appalling. Upon analyzing the results obtained from official examinations of school childrens' teeth in various countries, we find that from 90 to 97 per cent. of them have defective teeth. Ailments of the teeth constitute by far the largest percentage of defects among school children. A very comprehensive report just issued by the department of public instruction in New South Wales, upon the physical condition of children attending the public schools, shows from 80 to 90 per cent. with defective teeth, or an average of 4.4 defective teeth per child, whereas only 21.7 per cent. were otherwise physically defective; 57 per cent. had defective vision, 49 per cent. had nasal growths and 24 per cent. were afflicted with throat trouble. Many of these other defects really originated with the diseased conditions of the teeth, and consequent inability on the part of the child to properly masticate and insalivate the food thereby inducing nutritional disturbances of greater or less magnitude. When one considers what an ideal culture medium the cavities of decay in the teeth afford for the development and propagation of myriads of bacteria, malignant or otherwise, one is not surprised at functional disturbances of many organs of the body following closely upon caries of the teeth.

Many of these carious teeth through the death and decomposition of their pulps or nerves are constantly though unconsciously discharging this infected putrifying material into the mouth, and hence infect the whole system by way of the alimentary canal. What is the use in being as particular about feeding the child pure food and pure milk only to be infected as soon as it enters the portals of the alimentary canal with germs in many cases more virulent than those that ordinarily infect impure milk. So the toothache which the child suffers from is

really the least of the evils arising from decay of the teeth, and only serves as a danger signal or warning as to what will follow. It is the lowering of the general vitality of the body by the constant swallowing of half masticated and unsalivated food which puts the child with decayed teeth at such a disadvantage in the struggle for existence. German statisians prove that the children with defective teeth are intellectually inferior to those with healthy mouths, and lose much more time in their studies than what is required to keep their teeth in thorough repair. Therefore the German Government has adopted a regular system of inspection for school children's teeth, and in many centres has provided free dental hospitals for looking after the teeth of all those who cannot afford the services of a practicing dentist. Germany and the European countries in general have been much ahead of us on this side of the Atlantic in looking after the teeth of their children. We are only just awakening to the urgent necessity for adopting these protective measures. Diseased conditions of the mouth and teeth, are almost universal among modern civilized nations.

Examination of 4,259 pupils in the Halifax schools showed 970 with irregularities; 816 mouth breathers; 244 with fractured teeth; 103 with abscesses; 1,000 or more with teeth coated with calculus or tartar. Only 943 had teeth brushes, 423 had lost all of their first permanent molars, the most important tooth in the alveolar arch, 97½ per cent. had defective teeth, one way or another.

Out of 1,400 pupils examined in New York City, 74 per cent. suffered from defective teeth, 19 per cent from defective eyes; 47 per cent from diseased glands; 27 per cent. from nasal trouble and 29 per cent. from throat trouble.

In Toronto a careful examination of the teeth of the pupils in the Elizabeth St. School and in the Church St. School shows the following appalling conditions:—

	Elizabeth St.	Church St.	Total
No. of Children Examined	356	471	827
	P.C.	P.C.	Av. P.C.
Physical condition not good	48	22	35
Mouth breathers	26	17	22
Unable to masticate	41	29	35
Enlarged glands	47	8	27
Mouths not considered clean	50	86	73
No. of defective teeth per child	6½	8½	8½
No. of teeth unnecessarily lost per child	1½	1½	1½
Abscesses	8½	20	17½
Pus exuding into mouth	41	16	28
Pain	43	21	32
No. of children needing treatment	99	95½	95

Notice the close relationship between the figures representing the physical condition, lack of mastication, abscesses and pain, their general interdependence and correlation.

Subjoined is a table showing the conditions found among the various races of the globe as far as obtainable

Country State or Nationality	Examiner	Number Examined	% Defective Teeth
Germany	Obersthal in 1877	867	75
England	Fedley in 1887	3,149	77½
	Ass. of Dentists in 1887		
Prussia		19,720	95
Copenhagen	Dr. Kasowski	10,000	97
Female School at Reydt		3,200	99·02
Girls' Gymnasium, Moscow			95·07
Andover Mass	Dr. Sawyer-sky		96·9
New York	Saint Johnson	407	74
New South Wales	Ass. of Dentists	14,000	92
Nova Scotia	Ass. of Dentists	7,000	97·7
Toronto	Dental Ass.	4,000	97
Japanese	" "	800	50
Indians		Estimated	2·5
Malays		Estimated	3—10
Chinese		Estimated	3—10

The report of the International Dental Congress at Copenhagen in 1905 gives 80—98.5 per cent. as the average number with defective teeth in all civilized countries of the world.

Examinations of the skulls of ancient races show a much more perfect condition of the teeth than what is found among civilized people to-day. The question naturally arises, why this inferiority in tooth tissue among civilized nations in comparison with savage and ancient races. Apparently changed conditions of feeding are largely responsible for this retrograde movement of civilization. Instead of the raw uncooked vegetable and animal diet of uncivilized people requiring a vigorous and prolonged process of mastication we adopt a diet consisting mainly of soft pappy preparations, which require no effort at mastication, but which can be rapidly swallowed en-masse. Lack of use has evidently been the greatest factor in the degeneration of tooth structure and contraction of the jaws.

There is little doubt but that a few generations of careful and systematic supervision of the teeth of children and adults together with the adoption of a more rational form of diet, would show greatly reduced figures in the above statistics.

THE STATE MEDICINE FACTOR OF THE TORONTO ACADEMY OF MEDICINE

By J. F. FLEMING GOODCHILD, L.R.C.P., Lond.; M.R.C.S., Eng.; C.M., M.D., B.Sc. (Pub. Health), Edin.

During the last year and also in the previous two years, when Dr. Amyot was chairman of the Public Health section, may I mention that the Academy's public health section was feebly supported, not only by the Fellows generally, but by those more interested in this kind of work as the leading preventive medicine specialists of Toronto.

Though re-election to the chair of this branch of the Academy for the present year gave me very great pleasure, I rather felt that as I am not engaged directly in Public Health work it would be better for the section to have as chairman some one more fortunate in this respect. With the view, therefore of benefiting the Academy I sent in my resignation to the Council.

The President, Dr. Albert Macdonald and members of the Council, however, so kindly asked me to reconsider the matter and so generously offered their co-operation and support for the good of the section that I have the pleasure to be with you for one more year.

Let us at this opening meeting make a plea for the continuance of this section—let us try to point out that it is important and necessary to the usefulness of the Academy that this State Medicine Department should be kept alive.

I shall endeavor to do this by reminding the Fellows of past achievements in sanitary reform, by reminding them that medical men have been, and are still, interested in the work and problems of hygiene and by directing our attention to the vast field of work in this line waiting for the workers.

Physicians have always shared in, and more often than any other class of workers have been responsible entirely for the state and preventive medicine achievements of the past and now as it is chiefly to the medical profession that the people look for the hygienists of the future it is surely important that our Academy—representing as it does the entire field of medicine—should have a section as this in which the special preventive measures shall be studied and discussed.

It is well known to most of us that there are doubts in the minds of some of our Fellows as to whether it is worth while continuing to support and keep in existence this special factor of the Academy. The consensus of opinion has seemed almost to be that we may as well dispense with it.

Why so? Is it not a fact that the very foundations in which have been builded the great hygiene successes of to-day have been laid in the struggles, the work and triumphs of medical men! Such for example as the physician's discoveries in bacteriology and immunity, in the knowledge he has disseminated in regard to water bourne, milk bourne, animal and insect bourne disease, or in the facts he has brought to the notice of municipalities, as the exhaustive proof worked out by Dr. Farr, showing the direct relation of density of population and mortality, the direct relation of density of population to the incidence of infectious and other diseases. Such and many other lines of research have

Read before the Toronto Academy of Medicine, December, 1910.

done much in deducing the fundamental laws of sanitation on which have been built the great and useful work of sanitarians generally.

Without going farther it is enough to announce the fact that the chief health authorities of to-day in the great cities of the world and generally in all stations and places of importance where the health of citizens or armies must be guarded, are State Medicine specialists, members of our profession. I would say this itself is sufficient reason why our Academy should maintain a special health department.

Before going more deeply into our plea I would like to say at the outset, not only for myself, that for every scientific physician present, that we are neither pessimistic nor optimistic on the subject of preventive medicine, but feel rather that this special line of medical work is to-day a factor of no less importance and value to the individual and to the state than is any other in the wide range of medicine or her allied arts and sciences.

Though almost the entire community has shared with ourselves as physicians in the reform and improvement in sanitation still this is a line of achievement in which the medical has taken the lion's share, especially in preaching and urging; and more recently as to the general supervision and carrying out.

Public sanitation is a development chiefly of the latter half of the nineteenth century, though not entirely so. For example many works such as systems of sewerage, public water supplies and municipal baths, were carried to a high degree of perfection in the days of ancient Greece and Italy, particularly the latter.

When our predecessors started in to reform and improve the terribly insanitary conditions which once prevailed in cities there were more serious and difficult problems to face and solve, probably than any we now have to deal with, at any rate, to deal with in matters of sanitation.

In no way can I illustrate the forever unsatisfactory condition of cities generally better than by taking one city as an example and reporting shortly its sanitary condition some forty-two years ago. What has municipal sanitation done for the now beautiful healthy city of Edinburgh, which maintains one of the lowest death rates of any city in the world to-day, as low at times as thirteen per thousand per annum of its population?

We answer the question by stating facts and figures, which show that Edinburgh has been transformed in these recent years from a city containing slums, hitherto worse than any in America or Europe into its present modern healthy sanitary condition.

Let us go briefly into the condition as to sanitation in Edinburgh as it actually existed in 1868, forty-two years ago. The following facts are vouched for in the report of the Edinburgh Health Officers of that time, Drs. Littlejohn and Alexander Wood, and by the Rev. R. Maguire, who was Rector of St. James, Clerkenwell. They said: "More dirt degredation, over-crowding and consequent shamelessness and unutterable wretchedness exist in Edinburg than in any town of twice its size or in any area of similar extent to be found in the worst parts of London, Paris or New York. Here in old Edinburgh there was a loathsome infectious sore occupying a very large area of the town. The conditions were such that the inhabitants of several tenements, each tenement having a population of 250 to 300 people depended for their water supply entirely on one well in High street, opposite John Knox's house. From early morning until late at night there was a throng of people about the well waiting their turn for water. Children carried buckets to this well and often had to wait one to five hours to get their supply of water. Old people and others had to carry this water for daily use up as many as 150 steps to their homes in the tenement houses. It was a pitiful sight in the street and followed into the homes we saw how this lack of water helped to degrade. We went into thirty-seven houses that day," etc., etc.

Reading in the report we find many paragraphs similar to the one or two I now quote: "In a wretched den on the 7th storey with no direct light, a family consisting of father, mother and child, of three years were living. On the floor on a straw bed the husband was lying, having been ill with typhoid fever for six weeks. He was murmuring incessantly 'drink' 'drink.' The little child was crippled and

mentally deficient and kept crawling in the ashes. On a line across the room a half washed sheet was hanging steaming. The atmosphere in the room was poisonous. The mother was not able to carry up enough water for cooking and drinking purposes, let alone bring the supply necessary to ensure cleanliness. On our expressing sympathy she burst into tears, sobbing out "O God only knows, slaving after this water is killing me and him too, and in the glen where we came from the bonny burn ran by the door."

In this old town the population of a village was often crammed into the six or seven stories of one tenement house. In these places there was no gas, no water pipes, no water closets, sinks nor even temporary receptacles for ashes and the rooms were catered only by one long dark stone stair, used by upwards of two or three hundred inhabitants.

"Very many of these homes were unwarmed, without ventilation, without privacy, and often without direct light. In this old Edinburgh some 13,209 families lived in houses of but one room, and of these single rooms 1,530 were inhabited by from six to fifteen persons each. Many of the shelters had no windows at all and 900 of them were cellars nearly all dark and more or less damp. These figures give the result that the families living in one room and herding together in closer proximity than animals comprised 66,000 persons. In these tenements the slop pails containing the unwholesome accumulations of the day were kept under the bed, if there was a bed, and failing that in any corner of the room. The absence of means to dispose of refuse was utterly disgusting and injurious to health and inflicted sore toil on the women who were already burdened with drawing water from the wells."

It would be interesting to read further from this report, showing the sad conditions under which these families lived, but what has been mentioned of it is sufficient for our purpose and will serve to bring home to us the fact that an absence of plenty of pure water within the home, together with bad housing and overcrowding was the chief cause of this unhealthy state of affairs so general in the large cities of Europe and to a lesser extent in America at that time.

By the adoption of modern sanitary measures and as far as possible getting rid of the great slum tenements and other uninhabitable houses, the death rate in Edinburgh has fallen from nearly fifty per thousand at this time to the present low rate of seventeen, to fifteen and I believe occasionally as low as thirteen per thousand and per annumn. And we see that this wonderful sanitary achievement has taken place in very considerably less than half a century.

Not only has the provision of pure water easy of access in every home done much for the sanitary improvement of cities, reducing the death rate and lessening illness generally, but more particularly we see its salutory effects in the wonderful change in the incidence and death rate of such diseases as typhoid and cholera. In the midlands of England, where typhoid was once so rife, owing to provision of pure water this disease is now a thing of the past; there being but few cases occuring in whole counties, few cases among millions of people.

One of the chief causes of water pollution is the discharge of sewage into it. It is but a question of time until every water supply on the North American continent containing sewage in any degree will be considered unfit for use. Already the purification of water by slow sand filtration has done admirable service in lowering the death rate from typhoid in almost every city where the polluted water has received such treatment. With a pure water supply the death rate from typhoid remains at about eight or ten per 100,000 of the people, and these few deaths are mostly due to cases coming from outside, to infection from case to case in other ways as by flies, careless nursing and infection of milk and other foods.

The filtration plant established at Albany, and similar to the one building in Toronto, removes 99.27 1-0 of all organisms from the water and has reduced the death rate from typhoid so markedly in that city that Dr. Henry Harn reports: "The filtration of our drinking water has practically abolished typhoid in Albany. We have but few cases now and these mostly imported. It is difficult to secure sufficient cases to show the students and it has made a de-

cided difference in the physicians' incomes."

If Toronto cares to go to the additional expense of chemically cleaning the filtered water with chlorine as at present, the entire water supply of the city will be kept practically sterile.

It is of interest also to shortly review the smallpox problem and to notice how happily and successfully this former scourge has been dealt with by our predecessors. Bernoulli, the famous mathematician calculated that not fewer than fifteen millions of human beings in the last century died of smallpox, every twenty-five years and Sussmilch, an eminent statician of the time of Frederick I., estimated that nearly every one had smallpox and that it carried away a twelvth part of mankind. From 1729-1764 of every one thousand children born alive one hundred and sixty-one died of smallpox, a higher death rate among children than we now have from all causes in healthy localities. Now we have but few deaths from smallpox. The great diminution in the smallpox mortality occurred, of course, after the introduction vaccination. Here we have a perfectly wonderful achievement in preventive medicine and probably the surest indicator of the splendid results we may look to achieve from the application of modern vaccine methods in the cure and prevention of other forms of disease; and indeed we all know very well the excellent results now obtained by the use of sera and vaccines.

Now that the value of preventive medicine in the state and municipality is becoming so well known and understood the need for municipal health specialists becomes more and more imperative and especially so as the municipal activities increase in number and complexity. Mayors in Germany, city clerks in England, city engineers in all countries and special commissioners in many cities are now distinct professional classes and are stimulated in their work by the prospect of advancement to more important cities as their abilities increase. The same is now becoming true of medical officers of health, except probably in North and South American countries. Sanitary or health officers cannot now receive nor hold appointments as directors of health in Britain, in towns of any size, unless they are specially trained for the work. In Canadian provinces, special training is as yet of no assistance to any applicant wishing to engage in health work and no such training, so far as I am aware is demanded as a qualification of health officers anywhere in Canada. This fact itself is almost a sufficient reasons why the Academy's State Medicine Section should receive our support if only that its members should remain to do duty to urge and impress upon the Government this first necessity and thus in time bring about an efficient health service in the land.

Now that there is a near approach to a general agreement on the scope of municipal ownership, it is not outside our domain in this paper to say that this membership may rightly embrace all those services which are primarily or largely of a sanitary character like water supply, milk, supply, sewage disposal, street cleaning, disposal of garbage, slaughter houses, infectious disease hospitals, sanitary laundries and disinfecting stations, certain markets, public wash houses and baths as well as street closets and urinals; and probably all will agree that these services should be supervised at least by the chief sanitary officer.

The death rate from tuberculosis on our continent is slowly becoming reduced, but surely it is as yet a terrible scourage when in United States alone 175,000 persons die annually from this cause.

In regard to such diseases as scarlet fever the fatality has become so much lessened within the last fifty years that it is impossible to say to what extent the death rate has been lowered by isolation of cases. In the year 1907, the number of fatal cases as a result of this in Toronto was one, one death for the entire city, and yet a large number of patients had suffered from this fever that year.

Curiously enough the death rate from diphtheria has been on the increase during the last half century; until recently by the use of antitoxin this death rate is going down again.

By the application of preventive methods such fevers as malaria, yellow and other tropical fevers and parasitic diseases are readily stamped out.

Summing up the results of sanitation in

England and Wales, the Registrar-General of England computing from vital statistics there says: "There are now half a million cases of serious disease and ninety two thousand deaths per annum prevented in that territory already, as a result of improved sanitation."

Here in Toronto this Academy by the aid of its more progressive public health members has been of some assistance to our municipality in its effort to deal with the water problem, and of not a little value to the families of this community is the work and results obtained by the Academy's milk commission.

The problem of Medical Inspection of schools in Toronto has been attacked and though not yet solved we have every hope that before long it will be In this connection I would like to say that we should not despise altogether such simple measures as can be put in force by the principals and teachers in the schools. For example in the district of lower Sackville street, some years ago, when very few of the houses in the neighborhood had baths, and where the school children were in an exceptionally dirty and diseased state, great improvement was effected when the school adopted and enforced certain rules. At an examination one hundred and sixty-one cases of skin disease and vermin were found among the scholars. When Dr. Sheard discovered this wretched condition of health and absence of cleanliness, he ordered that every child take a bath once a week, the principal or assistants to examine the children to see that this was done. Individually the pupils were examined every Monday morning, and if any child were dirty he was sent home to be cleaned. The teacher gave a special look, and if suspicious two teachers took the child into a room by himself and examined him more carefully. In a short time this school became one of the healthiest in Toronto. The children keep themselves clean at some disadvantage, however, washing and bathing in houses where there are no conveniences for the purpose.

Our recently opened municipal bathhouse is a boon to some of the children, but of much more value would be the establishment of baths in every school. One boy at the Sackville school wrote an essay on "What he would do if he were a trustee." He said: "If I were a trustee I would put a bath in the school so that the pupils could wash all their bodies at once and not have to do it in sections."

Means to prevent the common everyday cold which is so troublesome in our north temperate climates and especially among the children, is a subject worthy of our attention.

Some time ago the Hygiene Association O. E. A., made an investigation into the causes of absence in Toronto schools and found 38,305 days absence from school in one month among some 12,000 of the children. In this month 24,725 of the days of absence were caused by illness, and it was found that of the many different forms of illness accounting for the total number of days, "colds" took first place; 10,040 days absence being due to this special affection. Upwards, therefore, of one half the entire time of absence from school caused by illness is due to "colds."

Here then is a subject worthy our attention. A simple illness which in most cases could be prevented and yet one that is causing very serious loss of time and an interference with the vitality of our children

There are many many more important matters and problems in preventive medicine in need of speedy solution, such as our high infantile mortality, the high incidence and death rate from venereal disease, and in the words of our President, Dr. A. A. Macdonald: "Let it be remembered as we try to solve this problem that the baneful influences of promiscuous intercourse and foul disease does not stop with the healing of the local sore.

Gentlemen, we have as earnestly in need of solution the cancer problem, the prevention of the vast increase in neurasthenia and mental derangements—the latter especially—a disease in the community bringing so much of sadness and expense to our people and nation, and yet in a vast number of instances, preventable.

Let me conclude by saying there is probably no department of medicine where solution in recent years has been more rapid than in that of preventive; and in the light of our knowledge of the very often limited value of drugs and other treatments in the cure of established disease it is surely the

duty of each Fellow of this Academy to do his share, even more diligently than in the past, in the work of helping along in the struggle that is bound to effect such greatly needed health reforms, such valuable achievements for the benefit of mankind.

Here then is a great field in which we may work and do much good, and as our work can be best carried out where it can be focused as in this special health organization of our Medical Society I would appeal to the fellows to stand by this department and keep it alive in our Academy.

There are now in this Academy six factors or sections, and these divisions have been made in order that the fellows shall have opportunity in these special departments to devote undivided attention to the special lines of medical science in which they may be engaged or more particularly interested, it being found that these sections with their own officers and interested members can deal more quickly and effectively with the special subjects than is possible at one general meeting of the society. By this means more is accomplished for the general good of the Academy, for its fellows and indeed for the general advancement of medicine.

We are here to-day members of the State Medicine Section and let us now clearly, see and realize the importance and necessity to this Academy of so useful a division as our own. And now I would make bold to state that if our members will remain to do duty and to stand by this department it will be found in the not very distant future that this now feeble section will surely become the strongest and most powerful factor in the life of the Toronto Academy of Medicine.

THE GREAT WAR

By HALL CAINE

Medical science makes no half measures now. Consumption is curable, it says, and in saying that it deals a death blow to the old theory of heredity.

I remember that in my youth we used to think consumption ran in families. We looked with dread at the closed doors of the farmhouse in which the pestilence had once appeared, and thought of the family within as of people living under an hereditary doom. The Angel of Death had passed their way and made his mark on their doorpost. "It's John now; it will be Jane next," we used to say, and the sense of hopeless subjection to a kind of curse so seized upon the sufferers themselves as to shorten the already abbreviated span of their lives.

"It's a fate, I tell thee; they cannot run away from it," people would whisper, as the members of the smitten family died off one after another, until the household was altogether gone, the house utterly empty, and the hearthstone cold. I recall the names of families whereof every member was thus swept away, except such of them as had gone off to England, to Australia, and to Canada. It never occurred to any of us that it was perhaps the house, and not the family, that was accursed. If we had gone up after the closed doors had been opened for the bringing out of the dead, and put torches to the infected place, we should probably have been doing the best possible service to the family by burning their homestead to the ground. But, instead of doing that, we used to send for the witch-doctor, a venerable impostor, half-deceiving and half self-deceived, who gathered herbs for the afflicted ones by night, and mumbled charms over them during the day.

In better educated and less superstitious communities the same general ideas prevailed. I have met with them all over the world. Scores of times I have encountered them in London, where they still cling to life with a terrible tenacity. It must be five-and-twenty years since a remarkable report, published by the Brompton Hospi-

tal, appeared to prove beyond the possibility of question that consumption was not an inherited disease; yet this fact, so full of hope for humanity, seemed to make no sensible impression upon the public mind. Down to the present hour vast numbers of people are living and dying in the settled conviction that consumption is born in the blood of those who suffer from it; and hence it is quite possible that the tyrannical idea is killing almost as many lives as the plague itself. But what is the truth? The truth is that consumption cannot exist without the tubercle bacillus, that this parasite is nearly always taken into the body after birth, and that there are scarcely a dozen cases on record in which it has been discovered in the new-born babe. Therefore, we may say to anyone who is living under the shadow of death from fear of heredity:

"Do not any longer believe that because your father or your mother died of consumption you must die of consumption also. The worst inheritance you can have from either of your parents is a vulnerable soil on which the parasite of consumption may prey. Look to it, therefore, that you strengthen and not weaken your defences."

Consumption is an infectious disease. We are all liable to it, and the discoveries of modern science seem to prove that everybody over thirty-five years of age appears to have been attacked by it. A short time ago a well-known London ,England, physician said something like this to me—I ask his pardon if I am not repeating his words with scientific accuracy:

"I am satisfied that fully half my cases of bronchitis, and even severe cold, with prolonged cough, indicate fresh outbreaks of earlier lung trouble."

Now, this statement, with the further one that post-mortem examinations have discovered tubercular lesions, healed or unhealed, in the bodies of nearly all persons who have died after thirty-five, appears at first sight to denote an alarming fact, but, at second thought, it must be seen to indicate an extremely hopeful one. It shows, apparently, beyond the possibility of question, that consumption is a disease that is not only curable, but has actually been cured in the vast majority of cases.

And that suggests a very interesting inquiry. We thought it appalling that one-seventh of the deaths of the civilized world were due to consumption, but there is another aspect of that astounding fact. If only one-seventh of those who contract this contagious malady die as the result of it, what of the remaining six-sevenths (or some considerable part of them) who contract the disease and yet die from other causes? Let me try, in my utterly non-scientific way, to explain.

I understand, then, that when consumption is taking hold of the human body a kind of warfare is being waged within. The battle is between the invading micro-organisms, the germs, called the tubercle bacilli, which I have described, and the white cells of the blood. These white cells appear to act the part of the policemen of the body, and their business is to drive off any foreign foe that would subdue and destroy it. Now, the result of the warfare thus set up depends partly, it seems, on the strength of the policemen, but mainly on the quality of the soil on which they have to fight. If the soil is good the policemen prevail and the foe takes flight. But if the soil is bad; if, for example, a man's lungs have been weakened by overwork or even overplay, by worry, by drink, by excess of any kind; if his defensive forces have been run down, and his resistance to disease has been undermined by illness, by insufficient nourishment, by loss of sleep, by lack of pure air; above all, perhaps, if his spirits have been depressed by failure or by bereavement, then a small dose of the enemy (taken into the mouth by the simplest means) may be sufficient to overcome the policemen of the body and enable consumption to establish itself.

Even this is abstract language, more proper to the pen of the scientific writer, and I ask to be allowed to describe the little I know of the assault of the dread disease by a more concrete illustration. I can think, then, of no illustration so appropriate as that of a beleaguered city, and no siege so exactly parallel as the siege of Khartoum.

There, in the Governor's Palace on the Blue Nile, sat the great soul whose immediate business it was to withstand the invasion of the vast hordes of the Mahdi's followers who lay encamped around him on nearly every side. At first the people of the city were strong and hopeful, and

under the direction of their leader they were able to repulse every attack of the enemy. But as the days passed their food became scarce, their bodily strength diminished, and their spirits fell low. Still, they held on and hoped on, for the Governor told them that a great army of their allies was coming to relieve them. But the relief army never came, and after long waiting and watching from the house-top, the heart of the leader himself began to fail. At last, when the power of resistance from within was at its lowest, Nature herself, with that callous indifference to to human suffering which she often displays, stepped in to break down the last of the city's defences. The waters of the White Nile washed away the more formidable of the fortifications, and then the whooping hordes of the Mahdi swept over Khartoum like a swarm of hungry locusts, killing first the great soul by whose strength the people had lived, and then destroying everything.

Something of this kind, so far as I can see, takes place in the human body as often as the germ of consumption lays hold of it, and, therefore, I assume it will be safe to say to everyone:

"If you allow your defences to be weakened by any excess whatever, whether by overwork or worry, or sorrow, or even the gaieties of society itself, it will only require a breath of impure air, a mouthful of germ-laden dust, a spoonful of corrupt butter, or a glass of apparently wholesome milk, to enable the worst enemy of the human race to enter your body and lay it low."

But already I hear the natural answer that it is not always within a man's power to resist the influences which go to make his lungs vulnerable, and that the inevitable struggle of life itself is often responsible for the conditions which expose him to consumption. That is only too pitifully true, and I count it among the cruelest aspects of this merciless disease that by its very nature it always hits a man hardest at the moment when he is least able to bear a blow.

The statistics of consumption show that the years of early manhood and early womanhood (about 31) are the period especially marked out for death. Can any fact be more distressing, both in the physical and moral suffering it indicates, and in the economic loss it denotes? Think of it. At 31 the majority of young women have become mothers, and their removal is laden with tragic loss to the children they leave behind. At the same age the majority of young men have become husbands and fathers, the bread-winners of families, and their deaths are disasters that must be multiplied by the number of lives that have depended upon their lives. And then, beyond the utterly incalculable human loss there is the scarcely calculable national one, for the State has lost prematurely vast numbers of producers of labour, taxpayers and ratepayers, all of them economic assets, and responsible factors in the welfare of their country.

And this brings me to a very grave question. What are the conclusions to which the non-scientific mind must come after examination of the lamentable facts which scientific inquirers have put before him? The first of them appears to be this—that consumption is a disease produced mainly by the conditions of civilized life, that consumption is, in fact, the disease of civilization. Apparently the savage races are entirely exempt from it. The Esquimaux and the Indian and, until lately, the negro races were immune. I can say from my own observation that on the Soudan desert, where the variations of temperature seemed to require that I should dose myself with quinine almost every day, the half-civilized Coudanese, living in their crowded and noisome tents, showed no traces of tuberculosis. But civilization brings with it the necessity for cities, and cities seem to increase their area by force rather than by desire. Hence narrow streets and lofty buildings, which, shutting out the sun, which is the deadliest enemy of the consumptive germ, and increasing the dust, which is one of its strongest allies, become responsible agents in the propagation of the disease. Then the necessities of industrial as well as commercial life become agents no less active, by huddling people together in factories and workshops, by surrounding them with the material which most easily holds contagion, and by employing them in the kinds of work which most speedily lower the bodily strength and reduce the power to resist infection. The larger the city, too, the greater the difficulty of escaping from it, in order to obtain that recuperation which the sailor,

for example, enjoys when he leaps up on deck and breathes the free air of the open sea after four hours' sleep in the stifling fo'c'sle.

So it seems to come to this—that if you are a civilized man, living in a civilized country, your risk of death from consumption is immeasurably greater than if you were a savage living in savagery. It seems to come to this also—that if you are at the age when life is most heavily burdened by anxieties, and you are of most use to your country, you are especially liable to the attacks of this terrible pestilence. But the evil which civilization has created it is the duty of civilization to remove, and in the presence of the appalling statistics of consumption which I have hastily summarized, it is at least the right of every citizen to demand of the State that its subjects shall be better housed and, as far as may be, better fed.

The second of the conclusions which the non-scientific mind is reluctantly compelled to draw from the facts laid before him by scientific inquirers is that consumption is (what Sir William Broadbent called it) "the poor man's disease." The rich man may contract it, and among the most pathetic of my recent experiences is that the ravages of consumption are just as pitiless in their human aspect (if that can be divorced from their economic aspect) when they visit the rich man's house as when they enter the house of the poor. Indeed, they have an element of cruel irony in the one case that is absent from the other. I was once driving in Cumberland past a beautiful house, which sat high on the side of a hill, with trees behind it, and sloping lawns and a blue river in front, and with the sun flooding the place with soft autumn light. It was like a glimpse of the Garden of Eden, and yet I was told that the only child of the family, a young and beautiful girl, had died that day of consumption. Not in all cases can the greatest wealth or the utmost resources of science save the life that is threatened by this appalling plague, but beyond question the perils of infection and the difficulties of cure are enormously increased by the conditions of life which poverty must impose.

For instance, the poor man who lives in the sunless rooms of narrow streets and works in overcrowded chambers, perhaps with work-fellows who are already infected, runs by that circumstance alone a thousand risks to one as compared with the rich man in his pleasant house and garden. Then the poor man's food is neither so good nor so plentiful as that of the rich man, and if he keeps his windows closed from the fresh air which would help to destroy the deadly germs it is partly because he cannot afford fuel for fire, and partly, perhaps, because he knows of long and better experience that cold stimulates the hunger which he cannot appease.

Having taken the contagion, too, the poor man's chances of recovery are immeasureably less than those of the rich man. He cannot go off to the Engadine and bask in the winter sun, with the clear, dry frosty air in his nostrils, or take his yacht and sail leisurely down the Mediterranean, or hire a dahabeah and float lazily down the Nile. He cannot even get out of the city once a week (if he lives there). He cannot afford to rest, which is one way of helping the defensive policemen of the body to expel the hordes of the enemy that are invading it. He must go on with his work as long as he can stand up to it, thereby reducing his chances of recovery and continually infecting the family he cannot afford to leave.

When the crisis comes and he is compelled to go into the infirmary, he does his best to escape from it before his cure is complete, lest his wife and children, who are probably unprovided for, may be compelled to go into the workhouse. And when death overtakes him at length, as it nearly always does, with utterly disproportionate rapidity, he leaves his death-room, laden with the dried particules of his expectoration, to infect other poor people who will follow him in the same place.

The third and last of the conclusions the non-scientific mind is compelled to come to, after examination of the statistics of scientific inquiriers, is that consumption is a malady which attacks with its fiercest virulence the finest types of the human race. It would appear natural that this white plague, which is always lying in wait for the vulnerable soil that is peculiarly fitted for its propagation, should assail with especial and relentless force the rare and noble beings whose bodies are constantly being consumed by the splendid activity of their souls. What this

means to the general welfare of the world, which of us can say? Think of the great spirits prematurely lost to life by this accursed pestilence. Keats, Schiller, Chopin, Spinoza, Rachel, and Robert Louis Stevenson are among the victims whose names come without prompting to one's lips. But when I look back to the period of my own early manhood, and count up, within the narrow circle of my own acquaintance, the number of young men and young women, unknown to the public, who have since fallen victims to consumption, I give it as my confident opinion that a large proportion of them were people who must have played a great part in the business of life if they had lived. A physician told me the other day that this was his experience also, and in no other connection can it be more true that whom the gods love die young.

I am quite prepared to hear that what I have said thus far on this subject is mainly sentimental in its appeals, and before attempting, when more space is at my disposal, to deal with the economic aspect of consumption, in order to show how great is the mere financial loss that is caused by this disease both to the individual units of the people and to the State as a whole, permit me to conclude with one statement which must certainly come home to all of us.

If it be true that consumption is not an hereditary but an infectious disease; if it be true that consumption is curable; if it be true that the mortality caused by the malady chiefly centres in the age of 31; and if it be also true, as the insurance companies tell us, that the average expectation is thereby curtailed by twenty years, then it follows that the stamping out of tuberculosis alone—and true co-operation in public health matters will do it—would endow everyone of us with longer life.

THE MIRACLE OF DIGESTION

By HEREWARD CARRINGTON

When one stops to think of it, there is nothing more marvelous in the world than the process of digestion. It is taking place all the time, too—right inside of us! We eat certain foodstuffs, and they form a living human body—flesh, bones, muscle, nerves, organs. And all of these nerves, muscles and organs are capable of living, moving and acting upon food in turn.

Look, for instance, at that chicken! It walks about, picking up seeds and grains and worms and what not; and all this is transformed into eye and comb, beak and feathers of multiple shades! The fish that swims in the sea lives on its varied food, and, in his case, it is transformed into scales and fins and glassy eyes, which give one the creeps to look at! Yes, it is all very wonderful.

One fact of practical importance must be borne in mind here. It has been said that "digestion begins in the mouth and ends in the lungs." The meaning of this is as follows: After the food has passed into the stomach, and is acted upon by its appropriate digestive juices, and after it has passed on into the intestine, and is acted upon by other juices there, it is absorbed into the blood stream, and carried to the lungs, there to be mixed with air.

The oxygen of the air combines with the particles of food, and renders them capable of being used by the system. Until this process has been gone through the food can not be used by the body. No matter how much food we eat, if it is not mixed with the oxygen of the air in this fashion the body can not use it. (Hence the great importance of fresh air after eating).

From this fact we draw the following important conclusion: That the more food we eat, the more we should breathe; and the less food we eat, the less need we breathe. If the disproportion between the two be great, and be kept for months and years, grave diseases are bound to follow in consequence.

Until recently it was thought that digestion was a comparatively simple process. The proteids—the muscle-forming foods—were, supposedly, quickly acted upon by the gastric juice of the stomach and ab-

sorbed. The fats and starches went on, and they were acted upon by the various juices and absorbed in turn. It was all very simple! Now, however, it is known that the process is far more complex, and that many changes are passed through before the food is really absorbed by the body, or ready for forming bodily tissue.

Starches can not be absorbed by the body as such. They must first be converted into a sort of "glucose." This can not be done in an acid medium; hence the necessity of chewing all such foods very thoroughly, so that they may be converted in the mouth by means of the saliva. Proteids are largely dissolved by the acid, gastric juice of the stomach. Fats and starches complete their digestion in the bowels. The fats are here made into a sort of soap—an emulsion—and in that condition they are absorbed by the blood, carried to the lungs, and finally grabbed up by the hungry tissue-cells, to make live bodily matter.

Most of the changes that are undergone in the process of digestion are now understood, and it has been found that they are chiefly chemical in character. The changes and reactions are numerous and marvelous, but they can be followed. From the moment when food is put in the mouth until it reaches the bodily cell, as nourishment for it, these changes can be followed and in large measure understood. But when this food material is converted into living matter—when it forms the body—no one can tell what takes place, nor have we the slightest idea of the changes necessitated in bringing this result to pass.

The food seems in some way "vitalized"—as though endowed with life from the living cell, and then that it forms part of it. But the mechanism which brings this to pass can not be comprehended. We are face to face with the problem, "What is life?" We may, in truth, call it "The miracle of digestion."

INSECT CARRIERS

By SIR RAY LANKESTER, K.C.B., F.R.S.

The little insects which we call gnats and mosquitoes are not only responsible through their representative, the Anopheles, or spot-winged gnat, for one of the most widely-spread diseases, viz., malaria, but in addition to this and to the serious irritation set up by their poisonous stabs or "bites" (a result in which microbes have no part, the irritating poison being produced by the gnat itself), they may casually introduce, by mere adherence of blood or dirt to their stabbing organs, other disease-causing microbes to which they are not the necessary and established intermediate hosts.

There is one other kind of gnat besides the Anopheles which is known to be the necessary and special host to a most terrible disease-causing microbe. That gnat is the Stegomyia of the east coast of tropical America, and the disease is the deadly yellow fever, or "Black Jack." The microbe is taken up by the gnat when sucking the blood of yellow fever patients and conveyed to healthy men. But it has to remain twelve days in the gnat before it can be passed on. It must undergo some changes and multiplication in the body of the Stegnomyia gnat, yet—and this is at first sight an astounding fact—it has never been seen! Scientific faith and the evidence of things unseen is here our guide. Experiment has conclusively shown that the "germ" of yellow fever is taken up by the gnat, and is carried by it after a lapse of twelve days, but not earlier. Some day we shall probably see this germ, and ascertain its form and behavior. At present it is not known. Nevertheless, yellow fever has been entirely abolished within the last ten years in many tropical cities by assuming its existence and preventing the gnat from carrying it!

Of the screw-like trypanosomes, which infest the blood of man and animals and frequently cause disease, the commonest is one which is often found in the blood of the common sewer rat. It was discovered thirty years ago by a distinguished young Army surgeon, Dr. Timothy Lewis (who

died before his best work was done), and is called "Trypanosoma Lewisii." A drop of the blood of an infected rat examined under a high power of the microscope shows hundreds of the little screw-like parasites swimming and knocking the red blood-corpuscles about in a most active fashion. This is a case in which there is adjustment between the host and the parasite, for the rat is not injured by the presence of the trypanosome in its blood. After a time the trypanosome dies out, and the rat is none the worse, but has acquired such a condition of the blood that it cannot be re-infected. The rat trypanosome is carried by the rat-flea (the kind called Ceratophyllus fasciatus, common on European rats) from infected to uninfected rats. The parasite undergoes during six days elaborate changes and multiplication in the flea. The latter is a true host, not a mere mechanical carrier. It is being carefully studied by Professor Minchin, of the Lister Institute. The louse of the rat also can carry the trypanosome from one rat to another, but less certainly than the flea; and it seems that the rat louse is a mere carrier of this parasite, and that no important development of the trypanosome takes place in it; it is not a true host. Rats are also infested by "mites" or "acari," like the itch insect of man; and it has been shown by a beautiful series of observations that in the United States another microbian blood-parasite, called "Hæmogregarni muris," is carried by these mites from one rat to another, and undergoes a special and remarkable sexual process of multiplication in the body of the mite.

Whilst the rat-trypanosome of Lewis is harmless to the rats in whose blood it lives, and whilst there are other trypanosomes, such as those of the frog's blood and of the blood of many fishes, of turtles, and of birds, which are also harmless to their hosts, there are others which are known as the cause of deadly disease. The best known of these is that which is carried by the blood-sucking "tsetze fly," of the fly-belts of South Africa, and is conveyed by these flies from the blood of big, wild game animals (such as buffalo and antelopes), in which it exists without doing any harm, into the domesticated cattle, horses and dogs, which mankind has brought with him into this region. The wild animals are "reservoir hosts," from which the flies continually spread the infection. In the domesticated introduced animals the trypanosome (which is named "T. Brucii," after its discoverer, Colonel Sir David Bruce) causes a fatal wasting disease called "nagana." It is not yet ascertained what changes this trypanosoma Brucii undergoes in the tsetze fly's body, if any. It is certain that the tsetze fly acts very efficiently as a direct carrier, rapidly introducing the parasite from one animal to the next one which it bites, just as one may introduce it by means of a lancet.

Another trypanosome, called T. Gambiense, very like the T. Brucii but distinct, has been shown to be the cause of the deadly sleeping sickness of the natives of Tropical Africa (200,000 natives recently died of it in five years in Uganda), and it is carried by a similar but distinct kind of tsetze fly. Both the fly and the trypanosome are very close indeed in appearance to those concerned in the nagana disease of horses and cattle, and there is at this moment some fear that the southern tsetze fly may prove to be capable of spreading the sleeping sickness amongst the human inhabitants of Rhodesia and Southern Africa. It has proved very difficult to ascertain what happens to the trypanosome of sleeping sickness when it remains in the body of the fly, because there are often other kinds of trypanosomes present there, and confusion of one with the other is at first unavoidable. It is now certain that the parasite can remain active and capable of infecting a man for many weeks after it has been sucked up by the fly, although immediate transference to a new victim by the fly's bite is possible, if not usual.

These tsetze flies (called by scientific men "Glossina") are very awkward customers. They are a little bigger than a house-fly, powerful and rapid fliers. They alight on a man without his feeling it, bite at once, and are off. To escape their deadly attentions one must avoid the shady groves near lakes and streams where alone they are found—and groups of trees must be cut down on this account in the neighborhood of towns and villages in Central Africa. No "reservoir-host" or regular animal-host besides man has been discovered, as yet, for the sleeping sickness trypanosome, though not improbably one exists.

Many other kinds of trypanosome inhabiting the blood of cattle and horses and other large animals are known in Africa (several have recently been described from Central Africa) and other parts of the world, which cause disease. One, called T. vivax, is carried by the tsetze-fly in Central Africa, and attaches itself to the inside of the fly's proboscis, where, apparently, it multiplies. It was at first thought to be the sleeping sickness kind, but is not so. It is carried by the fly to the blood of cattle. Another in India and Burma (called T. Evansii) is very like Bruce's trypanosome of the fly-belts of Africa. It causes a distinct disease called "surra" in camels, horses, and elephants, but no special fly is known as its carrier. Probably several blood-sucking flies serve it in this way. In South America another is known causing great mortality among horses, but no special fly has been discovered as associated with it. Another in North Africa causes a disease of horses and camels called "dourine."

The view has been put forward by Professor Minchin that these numerous disease-producing trypanosomes, which contrast with the harmless rat trypanosome, are newer varieties—so to speak, "enterprising" races—of previously harmless species which have effected a lodgment in new hosts which are not yet "adjusted" to their presence. The well-adjusted, old-established trypanosome has but one kind of animal as its host, and none of those I have mentioned, even the ill-adjusted disease-producers, excepting the Trypanosoma Gambiense of sleeping sickness, can live in man. When the newer disease-causing races or species of trypanosome have killed off the more susceptible individuals among their new hosts, a race of the host-animals must necessarily be produced indifferent to, or tolerant of, the chemical substances produced by the trypanosomes which at present act upon them as deadly poisons. But the making of the immune race takes time and much sacrifice of life.

The clothes-louse of man has been shown experimentally to be the carrier of the microbe of typhus fever (gaol-fever), and the common bed-bug is believed to be the usual carrier of the spiral filamentary bacterium (Spirillum) which causes relapsing fever in Eastern Europe. In Africa a microbe causing relapsing fever is carried by a mite or acarus, which inhabits the earth-floor of huts used as human habitations. The mites are peculiar as hosts of disease-causing microbes in that they often (if not invariably), when they have taken in a microbe of the kind, which multipiles inside them, pass it on to their own, as yet unborn, young, so that it is the second generation of the mites which spreads the disease. This has been especially studied and ascertained in the case of minute non-motile pear-shaped parasites (Piroplasma) allied to, but not identical with, Trypanosomes. Some of these cause devastating cattle diseases in Africa, and are all the more difficult to check or eradicate owing to their infecting the young of the acarus or mite which first sucks them up from the diseased cattle. The young acari thus infected serve as intermediate hosts, live on the open ground, and become widely dispersed, and eventually attach themselves to healthy cattle and infect them with the minute disease-producing microbes. A not uncommon Indian fever called "Kala Azar," as also the disease known as "Delhi sore," are produced by two kinds of these minute pear-shaped, non-motile microbes, which, when cultivated (and probably when taken into the body of insects), develop a lashing hair or flagellum, and swim with corkscrew-like movement of the body, resembling in this respect a Trypanosome. The carrier and intermediate host of these microbes is believed to be a bug, but not improbably certain sand-flies play that part.

The most interesting discovery of late years in these matters is that of a Trypanosome which is found living and multiplying in the gut of the enormous bug common in country houses in Brazil and other parts of South America. The bug is known by the name Conorhinus megistus; it is as large as a stag-beetle, and is marked with red splashes on its black body. A friend of mine came across these unpleasant creatures in a room where he slept up-country in Paraguay. At night he saw on the ceiling what he thought was a decorative design, consisting of oval black patches. In the morning he was suffering from "bites," and saw that each black patch on the ceiling was now swollen (by his own transferred blood) to the shape and size of a large ripe grape. Dr. Chagas has discovered that these gigantic bugs pass the

Trypanosome, which flourishes in their digestive canal, into the blood of the small monkeys (marmosets) and other warm-blooded animals whose blood they suck. And on careful inquiry in districts where they are common, Dr. Chagas found that many of the human natives had this Trypanosome living and multiplying in their blood, having been infected by the bite of the huge bug. The infection causes serious illness, and leads to a kind of idiotcy when it has been established in the blood of children, arresting their proper nutrition and growth. This new Trypanosome is called Trypanosoma Cruzzi after Oswald Cruz, the founder of a laboratory in Brazil for the study of disease, where some of the best work of the last three years in the investigation of microbe-caused disease has been done.

Knowledge as to the existence of disease-producing microbes and their carriage by hitherto unsuspected bugs, flies, and other insects, is rapidly extending year by year. The last discovery implicates a nasty little blood-sucking two-winged fly, which abounds in damp basements and out-buildings in Italy and the warmer parts of the world. There are several species of the kind—that common in Italy and the Herzegovina—(I remember its unwelcome presence at Naples forty years ago!)—is called "the Pappataci." Naturalists call it "Phlebotomus papatasii." It is like a very small gnat, but has a fatter body, and is of a grey colour, and has drab-coloured wings. It has now been shown that this little fly carries to man the microbe of a "three-day fever," which is like the Dengue fever of India, and is common in the South of Europe. The microbe, having been taken in with blood, appears to have to stay for eight days in the Pappataci before it has so developed as to be capable of being introduced by the fly-bite to other victims. Details as to the history are still to be discovered. The Pappataci flies without any noise, and gets through the meshes of all but the finest mospito curtains. It makes a very nasty sore place where it bites or stabs so as to suck blood. There are species of it in Africa and India, probably active in carrying disease germs to men and animals. It is allied to the group and sand-flies called "Simulium," some of which abound in these islands and worry salmon-fishers with their biting swarms. It has been suggested that the human disease called Pellagara, in North Italy, is caused by a microbe carried by sand-flies, but no experiments tending to prove this have been published. It used to be thought that Pelagra was due to poisoning by unhealthy maize on which the agricultural population of North Italy feeds, just as, at one time sleeping-sickness was held to be caused by badly-prepared manahoe root, on which African natives feed.

World Views

The City of Health and Comfort.

Eugene Henard, the architect, for the city of Paris, outlines for us what the city of another century must be. Would it not be wise to set these needs before the eyes of our people that we may grow up to them and so escape the burden of making the changes that will be demanded by the business and sanitary needs of the coming day?

We are told that more space must be devoted to grass and trees and fountains —we shall be required to take better care of the public health.

The roofs of the buildings must provide for flowers and plants—recreation will demand that we receive our guests in the open air whenever the weather will permit, and taste will require the presence of flowers and shrubs—such spaces will be enclosed by glass.

Terraces will be provided for aeroplanes.

Light and energy will be furnished by electricity. Petrol and oxygen will provide heat. Liquid air will provide cold to temper the heats of summer and enable each house to keep the desired temperature—why should not our houses be cooled as well as heated?

Each house will have one or more health chambers to which the occupants can retire when fatigued or sick—these will have double doors and windows, permitting the provision of the exact hygienic conditions prescribed.

The physician will keep his patients in health, not depend on the prevalence of disease for his livelihood.

No more will money be wasted on holidays to the mountains or the seashore—all conditions needed can be provided in the house by pressing a button.

The pavements will travel, not the pedestrians—natural forces will do the work without the consumption of human energy.

The streets will be broad and straight—the height of the houses will be exactly the width of the street.

Railway Cars as Carriers of Disease.

Dr. J. Howard Jones, Medical Health Officer of Newport, England, discusses quite at length the railway carriage as a carrier of disease. He notes that a great deal has been said about the carriers of two diseases, those individuals who are factories of typhoid and diphtheria germs and are active in their distribution, but the railway carriage is much more important and demands to be considered. These others distribute one kind of disease, each; the railway carriage is a carrier of all kinds of diseases. "There is always a difficulty in tracing outbreaks of disease to their sources," writes Dr. Jones, "on account of the complexity of modern life and the amount of intercommunication. Railway systems are undoubtedly fruitful means of the transferrence of infectious diseases from town to town and from one individual to another." He gives many examples, in which cases of measles, scarlet fever and other diseases have been sent from one town to another, apparently with the knowledge of the physician treating the case. In one instance scarlet fever was treated for rash and from the original case four men caught the disease. Two of them travelled by train to a fever hospital in a large town and the other two were taken by motor-car a distance of about one hundred miles. "One is loth to believe," writes this correspondent, "that members of the medical profession can be in the habit of sending patients suffering from infectious disease away without pointing out the dangers of so doing, unless proper precautions are taken. Dr. Jones says he has evidence of a case where rash developed into smallpox and an individual caused sixteen cases in the town to which she went. There were two of the passengers in the same compartment on the train who developed fatal cases and altogether 187 cases and 36 deaths. These examples, the writer points out, are those that have come to his notice in some accidental way and there must be very much greater numbers if all could

be traced. He asks the Royal Sanitary Institute to point out to the railway companies the fact that their rules are frequently broken in this respect, and suggests the desirability of drawing the attention of the companies and the public to the existing condition of affairs and calls for reform in the manner of cleansing the cars.

Helping the Sightless.

In every city, almost a familiar figure on some street corner has been that of a mendicant, a cane in one hand, a tin cup in the other. Sometimes a variation has been found in the unfortunate who saws on a battered and tuneless violin. Always, though, he has worn the insignia of his rank, a card bearing the words, "Help the Blind." And always tender-hearted passers-by have been found ready to drop coins into the little tin cup in order that the sightless one might maintain life in his afflicted body.

This spectacle, fortunately, is one that is rapidly disappearing. It has been found that the truest charity toward this class lies not in showering them with small coins, but rather in aiding them to support themselves in some more desirable fashion. One of the most commendable of philanthropies is that which teaches the blind to help themselves. When one is deprived of one of his faculties others become keener. Because of this rule the blind person's sense of touch is extraordinarily developed and thus permits him to become a skillful craftsman even though he is unable to behold the work of his hands.

Agencies are at work nearly everywhere now teaching the blind the best use for their hands and fingers. But there must be further support and encouragement from the public if the plan is to succeed fully. While the blind produce eminently merchantable articles, the public must learn their desirability and have easy access to the places where the goods can be purchased. Before Christmas a department store in New York devoted space to a display of these products. No charge was made to those who fashioned the articles or to their sponsors, and every cent the articles brought was turned over to the makers. This suggests the thought that department stores might well afford to give space to such articles at all times, thus adding to their reputation for public spirit and generosity. Salespeople could doubtless be provided from among the blind themselves. The blind would prefer not to be idle, not to be indigent, not to be mendicants. Let them be helped in the most practical way.

The Plague: How It is Spread.

James Scott writes in "The Sanitary Record" (London): If proof were wanted of the amazing fact that minuteness of living forms is synonymous with tremendous power, it could be found in connection with the influence of microbes. For the creation and distribution of evil—and in some directions for good—they are possessed of very mysterious, far-reaching capacities. Among the foremost examples must be classed the plague microbe, named Bacillus pestis. This is the germ which is at present occasioning so much anxiety to the Medical and Sanitary Authorities, causing them to institute plans and precautions which, in the judgment of persons who know nothing of the possibilities of the subject, savor more of the action of unreasoning, panic-stricken men than that of sane ones.

But men who are familiar with the performances of these invisible objects know that those who govern municipal affairs should be warmly thanked for their vigorous care, as they are undoubtedly preventing the occurrence of disasters of a very horrible, deadly character, such as that which ravaged this country during 1665—at the time of the Great Plague—and still takes toll in thousands of lives in India. From July, 1909, to June, 1910, there were 141,357 deaths from plague in India.

To look down the compound microscope at some of the microbes of the plague always surprises the uninitiated observer, because, although they may be magnified several thousands of times, they appear to be simply a collection of tiny dots. To reflect, however, on their capabilities is to induce a shudder; for there are enough depicted to devastate a whole town, if they could secure lodgement and multiplication in people's bodies. They would lay its inhabitants prone as corpses within a week.

How strange that normally invisible specks should be able to do more mischief

among mankind than would an army of wild beasts! It makes a man feel absolutely foolish to know that such things can take away his life. If he could strike a microbe with an axe, as he can a venomous reptile, he would not seem quite so helpless. But pestilential microbes—ugh! they are mysteriously abominable.

The idea seems almost too ridiculous to contemplate. They are unconscious things, more like seeds than anything else, and so are entirely devoid of any evil intent; yet nothing could exceed their virulence and destructiveness.

The disease is called bubonic plague because of the buboes, or inflamed glands, so characteristic of its work. It spreads epidemically. It is infectious rather than contagious—an important distinction—and is divided into several varieties according to the organs chiefly attacked. The germs differ slightly in properties, one kind being called Bacillus pestis fulminans. This is fatal within twenty-four hours. Other conditions are less alarming. From five to six days is the period of incubation, or unfelt development of the microbes in the blood. Then their poison breaks out in all its revolting hideousness. The patient is suddenly seized with headache, rigor, chill, giddiness, thirst, vomitting, pains in the back, and limbs, and prostration, accompanied by severe fever, when the temperature may rise to 106 deg. Death generally follows about the tenth or eleventh day; but, if the victim survive this period, complete recovery is very probable.

Inflammation of the lymphatic glands (buboes), are the most noticeable signs of its presence; numerous carbuncles also springing into existence. The membranes of the lungs, kidneys, and other organs, are seriously affected; while frequent bleeding of the nose and lungs is a prominent symptom.

Seventy thousand people perished during the Great Plague of London, in 1665. It should be remembered that the town was a comparatively small place, so that these proportions were immense. About 90 per cent. is the average death rate now of persons attacked.

Coming to more recent times, we learn that in Hong Kong, during 1894, two thousand five hundred people lost their lives; and that in Bombay twenty thousand inhabitants were destroyed between September, 1896, and May, 1897—nine months. In 1900 an outbreak at Glasgow was quickly suppressed, and was, therefore, not serious, thanks to the Authorities.

I now wish to deal with this peculiar microbe. It should be pointed out that when mounted on the slides they are soaked in an embalming medium, and have been so treated that they are rendered powerless. Upon magnifying them to a larger scale, we find that each specimen is a short, thick, round-ended rod or cylinder. Their usual method of multiplication is by division across the middle, when each half lengthens into a perfect bacillus that reproduces itself similarly. One germ is thus capable of becoming millions within a few hours, altering the composition of the fluids and other substances containing them. This is the secret of their actions. They absorb certain constituents for their own support and propagation; and in doing so, decompose or modify the remainder. These microbes were first isolated, or discovered, in 1824 at Hong Kong by the scientist Kitasako.

They may obtain admission into the body through abrasions on the skin, scratches, cuts and wounds. The pneumonic form, affecting chiefly the lungs, may secure lodgement through the breathing channels—the mouth, nose, and throat. The main means of entry are, however, through the punctures made by "biting" insects. Rats are the breeding bases for the germs, which get into the stomach of the fleas that feed upon them. These fleas are called Pulex cheopis; while the human being's species is named Pulex irritans.

No flea of any kind will feed on cold blood; so that as soon as a rat dies of the plague the insects leave its body, and, if they cannot find other rats, will attack any warm-blooded animals, including man. Although each creature possesses its own style of flea, as a rule, they are never averse to interchanging habitats. The house flea is not regarded as the source of mischief; yet the possibility is ever present that it may cause infection. Male or female rat fleas would not hesitate to interbreed with the domestic variety, among which the disease would rapidly spread. It should be understood that there are only trifling, microscopical differences be-

tween the various kinds of fleas, any species being typical of the remainder.

It has been proved that hares, rabbits, squirrels, and similar creatures are capable of becoming plague stricken; so that where an unusual death rate is noticed among them by foresters, farmers, and other men who have the chances of observation, suspicion should be aroused, and the authorities be informed of the matter. It could soon be determined whether the animals died of the plague.

A flea does not "bite" in the ordinary way—it punctures or bores the skin and superficial flesh. Beneath its head, almost between its front pair of legs (and generally concealed by these limbs), are a pair of triangular plates, between which depend a marvelous set of minute, yet perfectly modelled weapons. There are a couple of thin knife-like blades, and a divisible rasp with its inner faces deeply grooved throughout their length. Within this rasp, when the halves are united, can be laid a notched piercer. In "biting," a flea probes the flesh with the rasp, and then drives its internal piercer deeper down, meanwhile keeping the puncture open by means of the knife-blades. The rasp serves as a sucker for the blood, which, in comparison, resembles the proportions which would occur if an elephant sucked up a lot of marbles, Spanish nuts, green peas, and so on, contained in a thin syrup. We can only make a crude comparison.

It may perhaps be necessary, for the information of some readers to say that blood is a rich fluid (plasma when in the body; serum when withdrawn) in which float dense multitudes of red, sunk centre, discs or corpuscles, and globular phagocytes, whose duties are the destruction of insidious germs that enter the blood vessels. These phagocytes (which constitute a certain proportion of white corpuscular leucocytes) endeavor to absorb and destroy the germs. If they fail, victory for the microbes means severe illness.

In the case of fleas that have bitten diseased rats, their lancets or puncturing weapons naturally withdraw many of the microbes, and these are quite readily conveyed into the blood stream of the human being who afterwards gets punctured by that flea. That is the most signicant point to bear in mind.

Many of the microbes that are disseminated from rats killed by the plague would also adhere to the comparatively formidable claws and bristles terminating each of the six legs of the insect. In this case it would only be necessary for those claws to come into contact with a pin scratch, or other slight wound, to introduce the wretched disease into the system.

Inoculating serum is made with a boullion culture of the microbes. Blood attacked by germ poison (toxin) develops an anti-toxin or serum, which acts as an antidote. It is because the blood is weak that a fatal result occurs. The principle involved in inoculation serum is that it will induce normal blood to prepare this anti-toxin, so that should germs afterwards get into the blood they cannot multiply, nor cause mischief.

Seeing that a penalty of £100, and a daily fine of £50, may now be inflicted under recently issued orders, for neglecting to report attacks, and for other failures, it will be understood that the scare is a very serious one, and calls for precautions all over the country. A plague-smitten flea can live for three weeks, and can infect anyone during a period of fifteen days after leaving a host—or victim—so that it has plenty of time to get transported miles away, in baggage and clothes, and originate fresh plague spots

Eating to Live.

Emory J. Haynes says that no doubt man lives to eat. That is, the enjoyment of food is one of the benefactions of nature. The social bond of the hospitable board, the family meal, the dinner of friends is strong to bind us together. The arts have not seemed too esthetic to adorn the noble feast; music, architecture, painting, oratory, literature and every lesser art have lent their graces to meats and drinks.

But for everyday life the diet is a mere means to an end. The end is strength—health and strength perhaps we should say. What we eat gives us power to do or takes away power. Diet is a matter of the utmost importance if we expect to succeed in our calling and to last to any reasonable age. Does the average young man realize this?

Not unless he has trained for a game, or been alarmed by failing health. That there

are dietetic methods that promote a feeling of vigor and efficiency is not generally understood in youth. We learn by experience that certain foods are not for us, though other people may use them. There is no excuse for forgetting the label on what puts us out, nor can we take another man's habits for our guidance.

Insist on eating your own food, and reject food that hampers you in the day's work. The mass of learning on the mind's library shelves is the acquirement of a lifetime. At different periods of life we can not eat and work hard on different foods. It is a constant study.

The point is that one gives intelligent and constant attention to the matter of the food on which he works best; that he remembers the food that incapacitates him; that he makes no compromise nor trifles with rules that he has imposed on himself; that he be alert to refuse those friends who would injure him by kindness; that he be on guard in social hours, for the next day he must work and do his best.

Mere taste is not a safe guide for man. It may be that the lower animals are pretty well armed by taste and instinct. But the condiments that sweeten, pepper and spice man's food are a delusion. We awaken a false appetite and wholly confuse nature. Many things that taste good are almost fatally injurious to the day's work. Repudiate the ingenuity of the cook and judge what will be energy for masterly toil. Toil we must if we would win the prize, and the right food is like fuel to the engine.

In these days of close competition a manufacturer discriminates between different kinds of coal under his engines.

The Square Deal.

The "Engineering Magazine" is in close touch with the industrial world, and recognizes the importance of better sanitary conditions in the shops and factories. The following article, in the December number, is a plea for the wage earner, which should appeal to every thoughtful mind.

"Let us therefore approach the principle of the fair deal with our imagination, our sympathies, our sense of fairness, alert. The great bulk of the population of the United States, both relatively and numerically, a hundred years hence will be descended from those who are the wage-earners to-day. What our industrial officers make now of the working army, will make our future nation, not dreadnoughts and fortified canals.

"The wage earners are our people and our nation; if not its backbone and skeleton, if not its brain, nevertheless, its important flesh and blood. Moreover, the burden on them is both exalted and heavy. It is the men closest to their bread and butter who generally have correct instincts as to evils even if they often flounder as to remedies. It is the flesh that quivers with physical pain, not the brain nor the skeleton. It is on these workers that the duty devolves of bringing up respectable families on a small and precarious income. There is not room for all at the top, even if all were competent to climb to the top, and one of the great problems is to make to-day bearable without taking away the hope of a better to-morrow.

"A boy apprenticed to a trade ought to feel confident that he has not been allowed to enter a race in which even before he started he was hopelessly outclassed; he ought to see before him a reasonable certainty of tenure of position, of definite and increasing wages per hour until he has reached a maximum for his trade and locality; he ought to be assured of decent, helpful companions; he ought to be certain that all those things essential to his health and safety which he cannot do himself were being done for him.

"As to the man, the worker, without whom industry would collapse, all conditions ought to be standardized. Drinking water ought to be germ-free, life-destroying dust should not surround moving machinery, work illumination should be adequate, not ruinous to eyesight. Working hours should be reasonable and without overtime except in great emergencies, means should be provided for ascertaining directly his needs, his wishes, of listening to his recommendations."

Assurance of Good Milk.

Good milk is the most valuable single article of diet known to man, while bad or unwholesome milk is a source of great danger to health. Good milk is easily digested and contains all of the elements needed for the body; when examined by the microscope, it is found to consist of a large number of round substances, or

globules, which float in a colorless fluid; they are transparent and very small.

These globules are the fat contained in the milk and they have a thin coating, similar to the white of an egg, that is called casein. When the milk stands, the larger globules rise to the top and make the cream, which is the fat, and richest part of the milk, and when the cream is shaken, as in churning, these globules break and the fat runs together, forming lumps, which is called butter.

Milk becomes sour, either naturally by exposure to the air, or by the addition of an acid of any kind. When milk is exposed to the air, minute forms of animal life, called microbes, get into it, or they may be imported into the milk by the use of unclean utensils or articles used in handling the milk, thus showing the absolute necessity for cleaning utenals and receptacles used in handling milk, by thoroughly sterilizing them. There are few if any of the numerous places, such as hotels and restauarnts, that receive large quantities of milk and cream daily, who are so careful as to take the precaution of cleansing their milk receptacles by sterilization. For this reason, as well as other very important reasons, milk and cream should be delivered to such places in sealed bottles, which would also prevent the greater part of the milk from being robbed of its natural amount of butter fat, by skimming the cream off at the first dippings leaving the balance contained in the vessel only skimmed milk.

Bacteria gain access to milk in many ways, and multiply and grow very rapidly, thus if not properly handled, this food which is the most beneficial if pure, very often becomes a source of great danger as a disseminator of disease.

There are innumerable cases of dangerous diseases, having become epidemic through a supply of contaminated milk. A striking case of this kind recently occurred where an entire family of six having become afflicted with typhoid fever, which naturally caused an investigation to determine the source of the epidemic; the premises and the water supply used by the family were found to be free from typhoid germs, but finally it was discovered that the cows from which the family milk supply was taken, watered at a pond, and this pond water was found to be infected with typhoid germs and it was imparted to the victims by the cows drinking the impure water, and the family using their milk.

This shows the necessity for producing and handling milk in the most sanitary manner possible. The cows should have absolutely pure water and wholesome food. The milk should be taken from them in the most sanitary way; the receptacles should be properly cleansed and sterilized; the milk should not be exposed to the air more than is necessary, and it should be transported to the central pasteurizing plant as quickly as possible, pasteurized and placed in sealed bottles and held under a low temperature.

To produce and distribute a supply of pure milk in every house in a city, necessarily requires a large and systematic organization and to handle and distribute this important food product according to the most approved methods, necessitates the outlay of a large expense; but in this age and day, people are demanding foods that measure up to the proper standard as regards both quality and purity. They will not jeopardize the health of themselves or their families for the sake of getting an article cheaper, for that, in reality, would mean the worst form of extravagance. It is this desire on the part of the public to make sure that the food which they purchase, is pure and wholesome, which has brought into existence, the public Boards of Health and Public Food Inspectors, and their achievement toward the improvement of food products and in safeguarding consumers against the sale of adulterated or impure goods has been marvelous.

Science has been able to trace most of the dangerous diseases to their sources, and although it has not been able, thus far, to effect cures for all, it has found means of prevention, which is far more important; but not all has been done that should and can be done; this fact has been emphasized by the most eminent and authoritative members of the medical profession. Certified milk is milk which is refrigerated immediately upon being taken from the cow and put up in sealed bottles to prevent exposure to the air, but in supplying the trade of a large city, this method is not practicable as the expense and trouble of it would discourage many

dairymen from continuing in the business.

Pasteurization, carried on in the proper manner, is the only safe and practical way of supplying wholesome milk.

Nathan Straus ,of New York City, has been pasteurizing and distributing milk for the benefit of the poor babies of New York for 17 years. Before he began the death rate during the summer months was 134 out of every thousand; now it is only 62 out of every thousand, a great benefit largely due to his efforts.

An Arctic Sanatorium.

Sir Ernest Shackleton had had abundant opportunity for learning all about the virtues of cold air. Due heed, therefore, will be given his proposal to establish in Spitzbergen a great international sanatorium for consumptives.

A generation ago such a proposal would have aroused the derision of the public and even of the physicians. But nowadays the sanative qualities of winter air on weak lungs are better understood.

It might be objected, however, that Spitzbergen is a long way off, hard and expensive to get at and not very entertaining when reached. The tuberculous, like others, must have their interests and diversions. Cold, fresh air can be got at a high altitude more conveniently than at a high latitude. The Swiss mountain valleys in winter or our own Rockies are as efficacious as Spitzbergen, as well as being nearer and more entertaining. There the pulmonary patient may have his toboggan slides, curling contests and skating clubs, housewarming arrangements conforming to reasonable standards of living, and home and friends within a few days or hours.

Unless high fashion should take it into its perverse head to turn invalid and flock to the Arctic shores as a refuge from summer heats—making Spitzbergen a sort of inverted Florida—we see no great future for Sir Ernest's suggestion.

Household Pets and Consumption.

Experts of the Harvard Medical School have decided that household cats and dogs do much toward spreading consumption. Thirty per cent. of all the cats in Boston have consumption, according to tests, and the scientists say that this percentage probably would hold in all large cities.

That the public should be on guard against the hitherto unsuspected dogs and cats and that the diseases of ailing pets should be classified, as a measure of safety, are opinions held by such experts as Dr. Langdon Frothingham of, the Harvard Medical School, and the Rev. Dr. F. H. Rowley, President of the Massachusetts Society for the Prevention of Cruelty to Animals.

Dr. Frothingham, who has examined many cats at the Harvard Medical School, says:

"As to transmission of the disease, the greatest danger is, of course, when the cat has tuberculosis of the lungs. Then it may be transmitted when the cat licks the face of a child.

"The fact that children fondle cats and dogs so much more than do grown persons makes the case worse, and certainly in households where the child is fed only carefully inspected milk, and where every other care is taken to keep it from receiving the germs of the disease, equal care should be taken to protect it from diseased pets."

Passing of the Common Drinking Cup.

Among a number of other States Massachusetts has followed Kansas in enacting a law prohibiting the public drinking cup, a reform which when it was first put into effect in Kansas caused great inconvenience to travelers on through trains and much indignation as well as ridicule of Kansas as a State of cranks. But it is a reform that has stuck and been followed in several States.

There is now much complaint in Connecticut and the other four States adjoining Massachusetts because of its new law, with which the traveling public has not become familiar, against the common drinking cup, and some criticism that Massachusetts will have to give heed to. The law, for instance, does not prohibit the owner of a cup from loaning it to every other passenger on a train, and to that extent it becomes a dead letter. It does not prohibit passengers in trains from drinking directly out of the faucet of the common water tank, and this practice is indulged in, especially by immigrants. A law which interferes with fixed habits and customs is bound to be extremely unpopular until its merit becomes generally recognized, and meantime it is evaded in every

way that ingenuity suggests. But the common drinking cup in railroad trains and in hotels and restaurants is a thing that is doomed, and it is to the credit of Kansas that it is the first place on this continent that outlawed this common carrier of disease.

School Desks.

In discussing school sanitation in the British Local Government Review, December, Meredith Young writes that school desks are undoubtedly the most important items in school furniture. He says that "both desk and attached seat must be properly proportioned to the build of the body and to each other. Faultily constructed desks and seats almost irresistibly induce their occupants to assume positions which conduce to deformity and eye disease and cause improper pressure on the important organs in the chest and abdomen. In sitting, the body is kept upright chiefly by the action of certain muscles of the thighs; unless these have a proper *point d'appui* strain first of all ensues and later the muscles give way and the pupil leans forward and rests on his shoulder and elbow; when these become fatigued the weight of the whole upper portion of his body is thrown on to the edge of the desk and a horribly unphysiological attitude results. These ill results can be avoided very largely by supplying adequate support at the points where it is needed. To commence with, the seat of a desk should be just high enough to enable the whole sole of the scholar's foot to rest squarely on the ground when the thigh and lower leg are at right angles. This will be the case with most children when the height of the seat above the floor is about two-sevenths the height of the child. The seat should be deep enough from front to back to support the nates and four-fifths of the length of the thighs (i.e., a distance about equal to one-fifth of the height of the average child in the class). The seat should be slightly hollowed out and sloped gently backward with the front edge slightly rounded, i.e., like an italic *f* placed horizontally; this prevents sliding forward when the pupil is sitting upright. The back of the seat should extend upwards to the shoulder-blades; the lower portion of the seat ought to rise nearly perpendicularly for about one-third of the total height and the remaining two-thirds should be very gently sloped backwards. The most important parts of the body to support are the "small of the back" and that portion from the seat to the top of the hip-bones.

"As regards the desk, if it be too far away from the seat it involves leaning forward, if too low it necessitates stooping, and if too high the scholar must artificially, and with a certain amount of strain and distortion of the spine, raise his elbow and shoulder to reach up. The edge of the desk should therefore come well over the seat, i.e., a vertical line drawn from the edge of the desk should pass through the seat. From what has been already said it will be clear that the size of the desk and seat must be apportioned to the size of the pupil.

"Girls are relatively longer in the body and shorter in the limbs than boys, and allowance should be made for this in their desks and seats; about three-quarters of an inch is the average distance. The top of the desk should not be absolutely horizontal but should be given a very slight slope towards the scholar. If the head has to be bent down too much or the eyes turned down excessively, unnecessary strain will be produced resulting in early fatigue. If seats with adjustable backs can be obtained any intelligent teacher can apply the above principles. Where non-adjustable furniture alone is available several sizes of desks should be obtained and the pupils arranged in them, not according to their mental proficiency but according to the size of their bodies. Lockers and book receptacles forming parts of desks are not to be commended as they usually collect dirt and are not easy to keep clean."

Man's Redemption of Man.

Two notable articles appear in the periodicals for the first month of the new year, both dealing with the subject of germs. One is by Dr. William Osler, in the American, on "Preventive Medicine," and the other is by an editorial writer in American Medicine, on "Bacteriophobia." Dr. Osler grows deservedly eloquent on the triumphs of experimental and preventive medicine during the last quarter or half century and calls attention to the fact that the man who conquered cholera, Dr. Robert

Koch, is only lately dead. He cites the conquest of yellow fever in Cuba and Brazil as other notable achievements of modern medical science in dealing with epidemics caused by disease germs. The crowning victory, however, he assigns to the sanitary officials who have done such notable work on the Panama canal, which has been admitted to be a problem of health rather than of excavation. During the French control the death rate of white workers reached the tremendous percentage of 170 per 1,000, while it has been reduced by American sanitary methods to fewer than nine per 1,000, a rate considerably less than that in any city in the United States.

Malaria has been robbed of its terrors just as typhoid fever, cholera, pneumonia, diphtheria, smallpox and other germ diseases have been brought under control. Even tuberculosis is in the process of subjugation and Dr. Osler sees with the natural and not merely prophetic eye the time when this dread disease will be wholly subdued. All these achievements have been made possible by study of disease germs and by effective application of the information secured from such research.

It seems almost like a disparagement of this splendid work when one turns from Dr. Osler's article to the editorial in American Medicine deerying in vigorous terms what the writer calls "bacteriophobia," and the numerous "alarms" created by sensationalists who discover that cigars and postage stamps and clothing and paper money and many other things with which the people come in daily contact are reeking and teeming with untold billions of deadly germs. It is both sensible and timely to read these words:

"Bacteriaphobia seems to be at the root of the present dread of things we must handle daily. Common sense as well as decency and good taste dictate that we should avoid as many sources of infection as possible—even the least of them—and we must insist upon having clean clerks with clean hands, clean stamps, clean money, clean bread, clean clothes, clean barber shops and clean restaurants, but the point to enlarge upon is this—we get diseases from diseased people as a rule, and not from infected things. Bacteriophobia is blinding us to the real dangers—the living carriers. We know of many serious skin infections transmitted from face to face by barbers, and it is certain that a dusty day in a city fills the mouths of people with virulent organisms. In these directions it is necessary to continue the crusade, for there we find vital defects. The other dangers mentioned, though real and in need of remedy, are greatly exaggerated."

Building By-laws and Sanitary Dwellings.

In a paper read before the North-Western Sanitary Inspectors' Association at Liverpool, England, recently, Tom Robinson, M.R.S.I., dwelt on the following as being pre-eminently essential in sanitary house construction:—

1. The prevention of dampness.
2. The sufficiency of air space around dwellings.
3. Size and height of rooms, window area, ventilation, floors.
4. Compulsory provision of (1) coal place, (2) wash-house, (3) pantry or larder, and (4) bathroom.
5. Drainage, water closets, etc., dustbins.
6. Street planning, density per acre.

"It must be readily conceded, said Mr. Robinson, that dryness of house and site is of primary importance. Dampness, we are told, favors the development of consumption, diphtheria, rheumatism, and other serious diseases, and the precautions to be observed require very close supervision.

"As regards the site, and especially the low-lying sites more or less necessarily damp, I think the provisions of the Local Government Board's new Model By-laws are excellent—i.e., the raising of the site to a definite height as regards any particular area above Ordnance Datum. The only provisions in the usual by-laws in most districts affecting the height of the floor level are: (1) That the dampcourse must be below lowest timbers and 6 inches above ground level. (2) That the lowest storey must be of such level as will allow effectual drainage. While these two clauses are very necessary and useful, yet they do not in any average case fix any definite height of floor level. We are now asking the Local Government Board for a by-law which fixes the minimum height for floor above the kerb level at 18 inches. The exact position of the dampcourse in relation to outside ground level is of much importance, and my observation in various

districts leads me to the opinion that this necessary provision is more honored in the breach than the observance. But it is vital, and should be unflinchingly enforced. The modern tendency is to abandon the idea of basements, and this should make the correct and effectual dampcourse more easy of attainment, as well as to simplify the gradient of the drainage system.

"As regards the material to be used for dampcourse, it is important to notice the exact wording of the By-law Model Series (20), viz.: 'Sheet lead, asphalt, or slates laid in cement, or of other not less durable material impervious to moisture.' In my judgment this by-law has been most systematically disregarded in all those districts where the common, cheap, and ineffective "tarred felt" (or shall I call it 'tarred sand paper') has been allowed—see Model Clause, page 90. The material must not only be impervious, it must be durable. Many good forms of bitumen dampcourse are on the market, and are preferable in my opinion to either slates or tarred felt. Sheet lead I have never seen used on ordinary speculative buildings. Pitch and tar carefully graded, and of proper consistency and applied to the full width of the wall ⅜-inch to ½-inch thick may safely be passed. But when all due care has been taken as to level and quality of dampcourse it is a very common occurrence in houses of from £10 to £100 rental to find that the gardener has paid so much attention to the formation of nicely sloped and really artistic flower beds around the house that the soil has been banked up to cover both damp course and air gratings for ventilating under the floors. Occupiers and gardeners need some education on this point, for they not only grow flowers, but they propagate the bacillus which eventuates in 'dry rot' and consequent risks to health. And in this connection I may observe that even yet in the buildings of an average class the ventilation under the floors is inadequate. We must insist on through ventilation, back to front and side to side, with a minimum of blind ends.

"Concerning damp sites, concreting is not of very much use, unless fine stuff is used on the surface and properly floated or grouted. The idea that ordinary concrete is impervious to moisture is fallacious. Even when this process is carefully done, I suggest that the surface of the concrete under the floor should be at a higher level than the adjoining ground outside the building. Where the natural level of the ground water is within 2 feet or 3 feet of the surface, the site could with advantage be covered with good Portland cement concrete, put on in two layers with a layer of asphalt between, and the provisions of By-law 59 relating to subsoil drainage should be enforced. Compliance with these provisions, and the floor level raised 18 inches or 2 feet above kerb level, ought to make a fairly dry habitation, providing always that the walls are properly built, and the roof, gutters, and downspouts finished in a workmanlike manner. There can be no excuse for dampness or dry rot except the excuse of unpardonable ignorance, carelessness, stupidity, or a criminal haste to make money regardless of consequences.

"2. Air Space Around Dwellings.—Most sanitary inspectors to-day can, with a fair amount of accuracy, give the death-rate of any locality if the density of population per acre is stated. We now realise that overcrowding on space tends to illhealth, and that ideal conditions are impossible when houses are too closely crowded together. Nearly every town in the United Kingdom has been to a greater or lesser degree too closely packed together, and it is in this relation that more adequate powers should be given to Local Authorities to enable them to secure (1) Wider streets, (2) The compulsory planning on the detached or semi-detached principle. (3) A minimum air space at the rear of 500 square feet per house. (4) A standard number of houses per acre. With reference to the width of new streets, I suggest that the fixed amount of 36 feet or 39 feet, now in vogue should be abolished, and the width should be determined more by the possibilities of the use and amount of traffic which the street may be expected to serve. The following widths are suggested: Business thoroughfares of large towns, 80 feet to 100 feet; ordinary streets in residential districts, 45 feet to 60 feet; minimum for any street, 45 feet.

"This would allow of good footwalks and possibly a boulevard on one side at least of every street. In streets where the traffic is purely of a domestic character, the carriageway might be reduced to 18 feet or 20 feet, and the remainder utilized for

grass plots, etc. Our new by-laws: 8 foot footpaths, 23 foot carriageway.

"2. The building of long blocks of houses, terrace fashion, as we call it by way of a compliment, appears to me to be unjustifiable from every point of view, and I wish to lay special emphasis on this point.

"The disadvantages are: (1) Back streets required from 9 feet to 16 feet in width. These require paving, sewering, and lighting, and the maintenance cost, which is permanent, falls on the rates in most cases. (2) In the case of vermin the occupiers of adjoining houses participate in the resulting annoyance and discomfort caused by the careless habits of others. (3) More danger in case of fire. (4) Greater difficulty of obtaining good light by means of external windows. (5) Unnecessary crowding of houses together. (6) A dull, drab, dreary sameness, no variety. These disadvantages are all avoided by building on the semi-detached principle, and in my judgment the result is fully commensurate with the slightly increased outlay. The land which would otherwise form the back street can be used for back garden, and there is a reasonable possibility of having a sufficient amount of direct sunlight and fresh air all through the house. We are encouraging this idea in our district, and with conspicuous success.

"3. The question of the amount of air space at the rear of houses requires reconsideration. In many districts houses are being built with from 10 feet to 15 feet from the back of the house to the boundary wall. The practice varies very much. Our by-laws prescribe: (1) A minimum of 200 square feet open space; (2) 20 feet clear space measured at right angles to rear of building.

"Some districts I know insist only upon 150 square feet, and even then that amount soon becomes decreased by the erection of coal place, store shed, poultry house, etc. I incline to the view that the open space at the rear should not be less than 500 square feet, that back passages should be prohibited, entrance for all purposes to be from front street, with a side passage 4 feet wide as a minimum. There is no by-law at present fixing the width of such side entrance.

"Some elasticity on the foregoing amounts could be allowed, providing the total number of houses were kept down to a minimum of twelve or sixteen to the acre. Under existing by-laws it is easily possible to build from forty to sixty houses on an acre (excluding roads), a number which cannot be supported from a health standpoint. We must advocate hygiene and common sense development; we never find Port Sunlight, Bourneville, and Letchworth being held up to ridicule; they are laid out on the rational and healthy principles which we admire and commend. In this connection, we are now able to produce direct evidence of the advantages of hygienic surroundings. Let me trouble you to notice the death-rates in Port Sunlight, Bourneville, Hoylake, and West Kirby, as compared with those for England and Wales:

Average Death Rate, 1900-8.

England and Wales	15.69
Port Sunlight	9.63
*Hoylake and West Kirby	11.74
Liverpool	20.4
Bourneville, 1902-7	6.3

*Not corrected for deaths of those who come here as invalids.

Infantile Mortality, 1902-7.

	Per 1,000 births.
England and Wales	131.2
Bourneville 4N4N	80.2
Hoylake and West Kirby	92.2
Liverpool	164.3

Some remarkable figures have been just published with reference to the average heights and weights of school boys, fourteen years of age, in the various schools in Liverpool and Port Sunlight, and while we must be careful not to impute all the differences shown to the superior housing conditions, it must be an undeniable fact that the general sanitary advantages enjoyed by those at Port Sunlight have a very important bearing on the astounding disparity revealed. Briefly the results are as follows:

	Height.	Weight.
Liverpool—		
Higher Grade Schools ..	61.7	94.5
Council Schools (best)..	58.2	95.8
Council Schools (medium)	56.2	75.8
Council Schools (poor)..	55.2	71.1
Port Sunlight Schools ...	62.2	108.0

"This table confirms a long-standing impression of mine, viz., that given good surroundings, clean, airy dwellings, accompanied by regular employment, regu-

lar wages, and fair general economic conditions, the British artisan and his family will compare very favorably with any class of society for physique, for sound, healthy living, for mental, moral and physical stamina. It is to the extension of garden cities, coupled with, and not separated from, our industrial concerns, that we must look for the uplifting of the physical, moral, and economic standard of British manhood and womanhood.

"Before I leave this part of our subject I should like to draw attention to the report recently published by the Local Government Board on "Back-to-back Houses." This is the most comprehensive report on this subject that we have ever had, and it contains evidence directly supporting my claim for the abolition of the continuous block system, whether "back-to-back" or otherwise. In the report Dr. Darra Mair says in his summary and conclusions, page 27: (1) The death rate from all causes was greater in the "back-to-back" houses than in the "through" houses to the extent of 15 per cent. (2) The excess of mortality in "back-to-back" houses built in continuous rows was greater still, amounting on an average to 20 per cent. (3) The death-rates from all causes in "through" houses (continuous blocks) and in "back-to-back" houses with side ventilation (blocks of four), were about equal.

"I suggest, therefore, that if "back-to-back" houses built in blocks of four are equal from the general hygienic standpoint, as indicated in vital statistics, to the continuous block system of "through" houses, then "through" houses built in pairs, with a reasonable amount of air space both back and front, will be an advance well worthy of accomplishment.

"I have here two or three plans, approved by my Council, of small houses on the semi-detached principle. They are not ideal, but they show what has been done, and done in every case by ordinary builders catering for ordinary working-class tenants.

"Plan 1 shows fourteen houses built or in course of erection. These fourteen houses occupy just over one acre, exclusive of the street. Rent, 6s. 5d. per week. With baths, 7s. 4d. per week. Hot and cold water throughout. Air space at the rear of each house equals 1,000 square feet, just sufficient for a nice little kitchen garden, and a small garden at the front. Plan No. 2: Small cottages with more limited space. These are at the rate of 32 to the acre. Side entrances only 4 feet wide. Air space at the rear of each cottage equals 410 square feet clear. No front garden.

"I could show you a large number of other plans of semi-detached cottages which have been built in my district, all tending to show that as far as we are concerned we are doing our level best to develop and extend the idea that the semi-detached system is preferable from every point of view to the continuous block system, and the sooner it is made compulsory the better. Housing schemes which fail to provide a self-contained house, with just a bit of garden where a man and his family can regard themselves as supreme, "and on their own," are not to my liking, and I venture to think that some day such provision will be regarded with contempt by an educated democracy.

"3. Turning now to the house itself and the by-laws which govern the height and size of rooms, I think I can find some points of interest and some possible suggestions for improvement. I think I am correct in saying that the general by-laws in operation in this country fix no minimum of floor area for any room. It is permissible to build bedrooms 8 feet, or even less, without contravening any by-law. Surely some minimum should be fixed, and I suggest 12 feet by 12 feet as a minimum for every bedroom, dining-room, or living-room. The window area by-law is reasonably adequate, but is frequently lost sight of. If every room has window area one-tenth of floor area, and the window is open to the external air, we are assured of ample light. As regards height of rooms, I think the minimum should be 9 feet 6 inches, and there need not be much deviation. Height simply to increase cubic space is not of much use, floor area is more important. If we get window area one-tenth of floor area, and every window made to open for one-half its area, we need not trouble much about special means of ventilation. We shall secure ample light and air.

"I am convinced that we can unhesitatingly advocate the general abolition of the ordinary floor (ground floor), resting on joists with more or less space beneath

My experience has taught me that in a large number of cases wood block floors, or boards nailed into breeze concrete, can be provided at very little extra cost, and when properly laid on good concrete they are durable, sanitary, and in every way preferable. Most new houses in my district have these solid floors, and they are a real success.

"4. Building by-laws leave the provision of coal place, wash house, larder or pantry, and bathroom optional. I think it is time that each and every one of these necessary adjuncts to healthy domestic life should be made compulsory, in all new houses at any rate.

"I hate to see the coals stored under the staircase, or in some other corner of the house adjacent to the milk and butter, and it will not be much use spending money to teach children domestic and personal cleanliness unless provision is made for their practical applications at home.

The storage of food in a house becomes increasingly important as we realize the dangers of the common house-fly, those carriers of filth and disease, and we cannot regard any house as hygienically complete unless sensible provision be made for food storage.

"5. Drainage—The by-laws as to house drainage in the various districts throughout the country are by no means uniform; they vary a great deal, but not more than the general practice. It should not in these days be necessary to point out the desirability of having a separate connection to the sewer for each house. This can be done without exception if the Local Authority so decide. The idiotic state of the law on "drain" and "sewer" makes this essential in the public interest, although in some districts a combined drain is allowed under an agreement absolving the Council from liability. But the separate drain is the correct thing and should be insisted upon. A very impotrant item in house drainage is omitted from the by-laws in many districts, viz.: the inspection chamber. This is provided for in the Local Government Board's Model Series, and ought to be uniformally adopted.

"The very controversial question of the intercepting trap must here be referred to briefly. I am of opinion that there is a real danger of having too many traps on the house drainage system. According to the Model By-laws of the Local Government Board, each house drain must have an intercepting trap, and all the other connections must be trapped, including bath and lavatory waste pipes. This means that all the dirty water, generally containing much grease or fat, from the bath or scullery sink, etc., must pass through three traps before reaching the sewer, viz.: waste pipe trap, gully trap, and intercepting trap. Having regard to the first principle underlying the water-carriage system—that of prompt and unimpeded removal of all sewage matter, I think one may with some justification question the real value of this triple obstruction to the flow of sewage, and in suggesting and modification of this point I would begin with the 6 inch intercepting trap. Whether any intercepting trap is required at all depends upon purely local conditions. I can easily imagine a district having a modern system of sewers, laid at self-cleansing gradients, and constructed throughout in such a manner as to reduce the formation of sewer gas to an absolute minimum, where the primary object of interception need not be considered, sewer gas being non-existent. I am associating a rapid flow of sewage, an absence of obstruction and accumulation with a plenitude of ventilation. Given these conditions, then I think the intercepting trap can safely be abolished, taking care, of course, that the house drains themselves are sound, efficient and well ventilated.

"If the Local Authority permit the existence of foul and insanitary sewers, then sewer gas will be abundant, and must be guarded against. In such cases I suggest that a 4 inch interceptor will be preferable to a 6 inch, and I would here put in a word in favor of the 4 inch drain. For any house under £80 rental a 4 inch drain is quite sufficient, having a discharging capacity, when laid at a gradient of 1 in 30, of 175 gallons per minute, when running full. My further observations on house drainage may briefly be summarized thus: Gradient (ideal), 1 in 30; size, 4 inch; inspection chamber inside curtilage; inspection chamber, minimum size, 3 feet by 2 feet 6 inches; brought to surface; drain laid on concrete; drain tested with water test; Stanford joints to be used in water-logged ground; plain joints to be made with Portland cement; gullies provided with channel tops and waste pipes to discharge therein at least I

feet distant; drains under buildings (except outbuildings such as coal place, etc.,) not allowed; drain ventilator or soil pipe ventilator to be of 3, 16 metal, with caulked lead joints, to terminate 4 feet above eaves and 8 feet away from any window. I am inclined to think that if these points are honestly observed we might with advantage allow scullery sink waste pipe to be untrapped.

"As regards water closets, we insist upon and secure: (1) Approved wash-down type of basin; (2) window, 2 feet by 1 foot; (3) air brick or louvre for ventilation, and we treat outside water closets on these points like those inside. Ashpits for new houses are out of date. We have not had a new ashpit built in my district for 12 years. (We have, by the way, abolished over 800 old ones.)

"Sanitary dust bins of about 3 cubic feet capacity, and emptied once or twice a week, are a great improvement on any form of fixed ashpit, and should be insisted upon generally. There are many points in connection with house construction which I have purposely omitted, but I think if the foregoing details were to receive that close personal supervision which their importance demands, we should have a reasonable chance of securing healthy conditions in and around our houses, which would tend towards the realization of a higher standard of public health.

"It may be suggested that some of these things are impossible on economic grounds, but I refuse to believe that the richest country in the world is too poor to afford healthy habitations for her people. We have ample wealth; we have ample producing power. What we need, amongst other things, is a wiser expenditure of national wealth, and I am old-fashioned enough to believe that the provision of clean, healthy and happy homes is one of the first duties of every community which desires to maintain or to establish a high standard of citizenship."

The Mothering Class.

A novel subject of absorbing interest has been added to the curriculum of High Cliff School for Girls, Scarborough, England. It may be called "Mothering, practical and theoretical."

A real live baby has been engaged as the "subject," while a trained nurse from Queen Charlotte Hospital, London, explains to the pupils the best way to bathe and clothe baby and generally how to be a good mother.

Girls must be 17 or over to enter this class. Eight girls at present take part in the lesson which may follow such dull subjects as "arithmetic" or "algebra."

Each girl takes her turn in looking after the baby—a plump little girl, aged 13 weeks. They are taught by the nurse the following subjects:

How to bathe baby.
How to cut out and make clothes for her.
How to mix foods.
Scientific feeding and hygiene.
Cooking for the home.
How to detect baby's illnesses.

Every little duty which the careful mother has to attend to in the home is taught the girls by the trained nurse.

They have already learned this valuable "tip" in the art of mothering:

How to tell, by the way baby cries, why it cries and where the trouble is. To distinguish the "teething" cry from the "stomach" cry, the "pin" cry, etc.

Throughout the lessons the subject baby at the High Cliff School, Scarborough, has been a model infant. It is loved by every one.

Women and Public Health.

The important part that women can take in the measures for improving public health, and especially in the reduction of infantile mortality, has been for many years recognized in the appointment of women sanitary inspectors, and in the last few years by the appointment of health visitors and school nurses. The Local Government Officer, England, points out that the appointment of these officers is already authorized in London, and a Bill is now before Parliament to authorize their appointment throughout the country. In order to carry out these duties efficiently special training is required, and many institutions throughout the country have included this work in their curriculum. In London the Royal Sanitary Institute and the National Health Society have been giving systematic training for several years, followed by examinations, and the certificates given by these two societies are specified in the Statutory Rules and Orders issued by the Local Government Board among the qualifications necessary for a health visitor in London.

Editorial

The Health of the Children.

The recent report of the Chief Medical Officer of the British Board of Education, Dr. George Newman, is a most important official document from the standpoint of public health. It deals with the first year, 1909-10, in which the results of the medical examination of the public school children of England and Wales have been ascertainable and comparable.

For some years past there has been a question in the minds of the British people themselves as to the physical degeneration of the race, and this systematic inspection of school children it was believed would furnish the only practicable means of arriving at a fairly accurate knowledge of the facts. Thus, the Act of 1907, of the British Parliament had this point in view and the principle therein laid down was that local authorities should provide for the medical examination of all school children, immediately before, or as soon as possible after, their admission to a school, and at such other times as the Board of Education might select. Following out such directions, it is estimated that not less than one-third of all children attending the public schools could be inspected each year.

Dr. Newman points out as the result of the first year's medical examination that of the 6,000,000 children attending public elementary schools of England and Wales, about ten per cent. of them are suffering from nervous defect in vision, three to five per cent. from defective hearing, one to three per cent. from suppurating ears, eight per cent. from adenoids or enlarged tonsils of sufficient degree of obstruction to require surgical treatment, twenty to forty per cent. suffer from injurious decay of the teeth, forty per cent. have unclean heads, about one per cent. suffer from ring-worm, one per cent. from tuberculosis of the easily recognizable form, and half to two per cent. from forms of heart disease. The report enters into details regarding the magnitude of this evil as well as the character and extent of the attempts which are being made to bring it into subjection.

It is shown that medical inspection of school children should be followed up: (1) by informing the parents of any defect or disease found in the child; (2) making inquiries, after a reasonable interval as to whether the remedy suggested has been obtained; (3) ascertaining, in cases where action has been taken, what the reason is for failure to obtain treatment; (4) taking steps to remove obstacles in the way of the children's obtaining treatment, for example, considering how best to obtain or render assistance in the case of poverty, and bringing pressure to bear in the case of carelessness or indifference and affording further facilities for treatment should such prove to be inadequate in any given area; (5) re-examining all defective children at a reasonable interval, after a primary examination, in order to ascertain any change there may be in the condition originally noted, or the effect of treatment received.

Parental poverty or neglect is to be overcome by: (1) the teacher; (2) the school nurse or health visitor; (3) the attendance (truancy officer); (4) the voluntary worker on the care committee or similar organization; and (5), by the medical officer himself.

Then, in suggesting the order in which ameliorative measures should be applied, it is made clear that the organization of the work of medical inspection itself should be consolidated and perfected; the character of the requirements of each area in respect to medical treatment revealed by inspection should be studied, and a broad conception of the meaning of treatment should be taken and viewed as comprehending all influences, educational, preventive or curative, tending to better conditions of public school life.

Thus, while the defective visual acuity of children, particularly young children, calls for early correction, the rational treatment of many of these children would be an educational modification avoiding the necessity for spectacles. It would diminish the prevalence of bad habits, as working the eyes at a near distance, or insure adoption of suitable type of letter press, and, proced-

ing this, it would remove other unsatisfactory conditions of school life, including bad lighting and defective ventilation, overcrowding and over pressure, which together or separately are sources of fatigue and injured sight.

Again, it is pointed out that physical exercises in suitable playgrounds, have a wonderful bearing upon the health of children. And before sanctioning, therefore, any substantial outlay in specific medical treatment, the Board of Education should insist upon the necessity of receiving assurance that the local authority concerned has taken this into consideration and was really attempting to grapple with the local problem in a broad and scientific way. The British Board of Education advises that existing machinery in each area be used before hastily embarking upon an attempt to create new agencies, institutions or instruments of amelioration, and suggests a healthy economy in the use of such machinery or resources; an economy that might be obtained by wise co-operation between the local authority and neighboring authorities.

Dental disease has received separate treatment in Dr. Newman's Report, probably because it calls for aid from a special branch of the medical profession, the dental; and on account of the universal prevalence of oral trouble, so vast and often so imperfectly appreciated in its bearing upon the general health of the sufferers.

We believe that this report of Dr. George Newman marks a real epoch in the history of education, not only in England and Wales, but elsewhere. The report clearly indicates the lines upon which education should be conducted in the future; and in reading it one realizes the great fact that healthy bodies are a condition absolutely precedent to sound minds.

Inter Alia.

There have been a number of crimes in Ontario during the last year or so committed by people of ungovernable temper or other insane tendencies; people who were known to be mentally unsound and liable at any time to develop homicidal mania. Among the most recent of these crimes is the Goderich case, where a man beat his six-year-old son to death. This man had been arrested a year previously for threatening to kill his wife. The rumored excuse for insane people being at large in Ontario is the insufficiency of asylum accommodation; and this in spite of the fact that the Provincial Secretary, Hon. W. J. Hanna, is one of the most efficient heads who has ever administered the department dealing with such affairs.

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One of the noteworthy features of this day and generation is the constant seeking for higher standards of living and of warefare against disease and pestilence. Much thought is given right living, attention is given sanitation and hygiene and the effect of our environment on our health is studied. All of these things are to-day regarded as of first importance. A score of years ago we were just awakening to a knowledge that these things were factors in the constant struggle against those ills that beset the flesh, while when our grandsires were boys practically no importance was attached to them.

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In the last few years some of the greatest scourges of mankind have been robbed of their power to harm or knowledge has been given the world by some student which has made it possible for mankind to ward off the attacks of these enemies. Among these are yellow fever, typhoid, small-pox, diphtheria; and much progress has been made in the fight against tuberculosis. Twenty years ago any one of these diseases was considered a most serious affliction. To-day either we may prevent infection or contagion or we may combat the disease and nullify the venom of its attack.

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So it is that we have come, in this latter day, to plead an interest in any movement that tends to better health and higher living. Not only have individuals taken up the battle, but local, provincial and the federal government have been interested. They have come to a realization of the fact that one of the most sacred duties of government is to conserve the life, health and happiness of the governed.

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Winnipeg in many ways has a tendency to lead among Canadian municipalities. The Winnipeg Health Department's cam-

paign of enlightenment on questions of food supplies is a case in point. Well advertised, free illustrated lectures are being delivered by members of the health staff of the city, reliable facts and advice are being disseminated among food and drug dealers and Winnipeg merchants are finding that co-operation is more profitable in this campaign than a spirit of opposition.

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We can have freedom from preventable disease in proportion as we are willing to pay for it, and economy in this direction means sickness, loss, waste and death. Shall we continue to practice this false economy and incur the penalty? Shall we, while planning cities beautiful, neglect the elementary requirements and conditions of cities healthy and clean and progressive?

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While science has largely extended the list of preventable diseases and is able to look with increasing hopefulness, because with increasing knowledge, upon many that yield more slowly to preventive measures, yet the chief causes of death still present their baffling problems. These are especially tuberculosis, pneumonia, diseases of the kidneys and of the circulatory system, and cancer.

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The intestinal diseases of children must also be included among those in which the mortality lists fail to show improvement. Climatic conditions affect the record from year to year, as they must also that of all pulmonary complaints. With all our efforts for the babies, the infant mortality is still higher than it ought to be. It is not professional knowledge that is lacking here so much as the acceptance of popular instruction in personal and domestic hygiene.

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There seems little doubt that the term "measles" conveys to most people the impression of a common disorder of childhood that is more a nuisance than a disease. Now considering that all authorities on children's ailments are agreed that measles is one of the most fatal diseases of early life, that attitude of mind is a very extraordinary—not to say an unfortunate—circumstance. In this connection one well-known physician has written: "The mortality bills of large cities show what a serious disease measles is in a community. Among the eruptive fevers it ranks third in the death rate." Yet this important fact seems never to have reached the public, and the mother who is told at a hospital that her child is suffering from measles usually goes away quite pleased to think it is nothing more serious, and with very little idea of treating the condition seriously.

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It is now generally recognized that the members of the medical profession have a special duty to the community in the matter of reporting diseases and facts for vital statistics. If they neglect this professional duty, misery and death will result. If they make their reports as perfect as possible science will be advanced, legislation will be wiser and more effective, and public health and happiness will be increased.

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Hundreds of lumber camps up the Gatineau and Ottawa rivers are so filthy, the increase of cases of smallpox and scarlet fever in them is so great that the health authorities of the Province of Ontario have almost thrown up their hands in despair. One of the principal employment agents in Ottawa says:

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"According to the Provincial law, the companies are obliged to keep a washwoman in camp, but as a matter of fact they don't. They have them in the camps in Western Ontario, but not in this part of the Province of Quebec.

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"Then, again, the law is that a physician should visit the camps regularly, the company being allowed to collect from 50 cents to $1 a week for that purpose. When men refuse to pay, the company doesn't insist, and there is no way of knowing when the disease breaks out."

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Care for the public health has a wider influence than its direct relation to the country's producing power and prosperity. It must be a matter of concern if any ap-

preciable moral advance is to be made.

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It is easy to divert attention to the more superficial aspects of a problem. This is true in the case of the conservation movement generally. The conservation movement has its moral aspect, for the attitude of one generation toward the next of "after us the deluge," is essentially immoral.

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The right incentive to the conservation of other natural resources, any person who investigates must agree, is the conservation of the public health.

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The matter of health, through modern knowledge of infection and inheritance, has ceased to become a thing of merely individual concern.

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If you are careless of your health; if you fail to pay the proper attention to hygiene; if your chase of dollars leads you to practices that mean an inevitable physical breakdown, you are a social criminal.

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If the community herds its children together, at the age when they are most susceptible to infection, in an environment which makes the schools a hotbed for the spread of disease, and tries to cram them with information while it washes its hands of all responsibility for their physical condition, it is committing a social crime. Many breakdowns of later life are traceable to latent infections contracted in youth in the schoolroom.

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A German scientist has recently announced that many cases of tuberculosis among men of advanced years under his observation are simply the manifestation of germs taken in during the early and resistant years. The system of the child, unaided, may be able to prevent the development of the disease, but the germ lies latent in the glands waiting for a relaxation of the bodily vigor to make its manifestation in the most malignant form.

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Health is absolutely the most importanta community.

concern of the home and of the school. The aim of all instruction in hygiene is to make health a habit. Health, therefore, and hygiene demand that a word be said anent the filthy habit of spitting.

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The public should be made to understand this, and that consumption is not an inherited disease, that it is contracted like other diseases from a pre-existing case, the second depending upon the first; that it is also a curable disease if recognized early and properly treated.

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The school children offer the best material to work on in the promulgation of these lessons, and hence they should be taught in the school room.

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If people would cease to spit on the floor, on the walls, on the sidewalks, in street cars, and in public places, and if all sputum were burned, consumption, for instance, would soon cease to be. The sufferer from consumption trained to these health habits is absolutely not to be feared; if careless and not so trained, he is a menace to the community.

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The cruelty to children of which we see most is the cruelty of neglect, often the result of drunkenness. Punishment, the ordinary punishment, is useless and harmful. Power of detention is required with enforced labour for the support of the wife and children.

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Sanitation and recreation go hand in hand in promoting public health and welfare. The standard of health will be highest in those cities where not only is strict attention paid to pure water, milk and food supplies, where the streets and alleys are kept clean, and where there is rigorous regulation of contagious diseases, but where provision is made for the amusement and exercise of the people. Besides, public recreation centers, public playgrounds and public skating ponds will improve the moral as well as the physical standard of

Money expended for improving the health and morals, and for increasing the happiness of the men, women and children of a community, is not an extravagance. It is a profitable investment. The city authorities should receive these requests of the public health and recreation officials in a spirit of liberality and intelligence.

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Even the most conservative of the old school hardly could fail to appreciate the fact that a seat which requires a pupil to hump his back over his books or to sit with legs dangling in mid-air may result in physical ailments which would prove a handicap through life.

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A careful study of the seating problem in the school-room relates to one of a number of problems which concern the comparatively new science of school hygiene. Not that the old methods did not produce men of strength and character and trained minds. Probably they were the exception. They survived in spite of the adverse conditions under which their school work was conducted. Many others of less genius may have dropped out of sight. This is a phase one seldom hears discussed.

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Under the new ideas mediocre pupils are not ignored.

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Under these new ideas the school teacher does not ask vague questions and the pupils in turn are not permitted to recite carelessly. They are taught in any subject to seek related facts rather than to try to memorize a dry mass of worthless details.

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New York, distinguished for having the worst housing conditions in the world, but long the leader in housing reform in America, continues the leadership. Her 7,000 privies are now a thing of the past, and her 100,000 windowless bedrooms are fast disappearing.

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The outlook for the future is hopeful. The old idea that the housing problem could be solved by building a "model tenement" is fast disappearing. In its place, one finds emphasis laid upon housing laws which will control the situation for all time; on efficient and vigilant sanitary inspection; on garden cities and model small houses in place of huge tenements; on instructive visitation of our immigrant population, and the teaching of the elements of hygiene in the public schools and in the home.

• • •

In treating disease by prevention we must have right living; abolish long hours of work; change unhealthful conditions; get sanitary homes for the people at reasonable cost; let the people own, warm and ventilate properly their street cars; insure the education of the young. There is more value in natural environment than in goodly heritage.

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Perhaps what we need in health departments are women, able women, who can go into the homes of the poor and teach them how and why sanitary methods will improve health.

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A woman in such cases may do much more than a man. She can talk to the housewives and tell them how to care for themselves and their babies, as well as their homes. She can show them how to keep house in an economical as well as sanitary manner.

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The remedy for squalor is education. Law will help some. A law, rigidly enforced, that will prohibit owners from maintaining houses under a certain condition will, of course, remove the chances of their being rented. But even when such laws are in force it is hard to keep such places in good condition after the tenants move in. This has been shown in Gary, the model steel city of Indiana, where model tenements and cottages were rented to foreigners who immediately turned the bath tubs into coal bins, the deep sinks into garbage boxes, and never turned on the water provided for flushing the concrete floors.

A very large proportion of the people who rent squalid quarters do so from choice. Many and many a family has lived in a basement at a nominal rent and saved until able to buy a home. And many a family able to pay a better rent has chosen a crowded, dark and unventilated little tenement, above or below ground, in the closely packed district, because the rent was a dollar less and because they wanted the people close around them.

• • •

To be sure there are people who rent such quarters because they cannot afford anything else, but they are not the majority. And they deserve all the assistance they get. But it is a fact that the majority of squalid livers do so because they do not know any better.

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The only remedy for these conditions is education. Law for the landlord and education for the tenant, with aid for the poverty-stricken, would help some.

• • •

There can be no such thing as a comely city without a clean city. While we talk of beautifying civic centers, let us pause over this commonplace duty which lies so close at hand and which concerns everyone almost every hour in the year. The right sort of a city is a household which claims the pride of its people in little things as well as large ones. Anyone who carelessly or needlessly litters a sidewalk or a street betrays a certain dullness in civic patriotism.

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Particularly does this apply to the merchant who lets the space about his shop or store become cluttered from day to day. This sort of premises never attracts trade and never pleases visitors. It is hurtful to its own neighborhood and to the city at large.

• • •

Cleanliness never proved a hindrance to hard work and competition. It has always been on the side of dispatch, accuracy, quality and large output. Where things are cluttered up, where there is little light in the factory or workshop, where there is either no place for anything or, if there is, it happens to be elsewhere, not so much good work is done. Competition in cleanliness is a field of competition in which all manufacturers may well indulge, as well from selfish as from altruistic motives.

• • •

There is no doubt that the common drinking cup in the schools, shops, factories, parks and public buildings is a positive menace to the health of the people and will finally be abolished. The number of people in the streets and in public places thus liable to infection with tuberculosis, diphtheria and other transmissible diseases is not known, but is certainly great. And the drinking cup may be the means of carrying the infection from one person to another.

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Experiments have shown that bacteria of one kind or another are nearly always present on the public drinking cup. It is true, of course, that they are generally not of a dangerous variety, but their presence is evidence that disease-producing germs may be carried in this way. The number of cases of diphtheria and scarlet fever is sure to be reduced by removing from the schools one of the common carriers of disease. The public should be protected in every possible way, and doing away with the drinking cup will not be a hardship on any one and is an obvious duty.

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People should carry a drinking cup with them when they are traveling. The folding cup is inexpensive and very convenient.

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Pasteurization of milk is the one thing we can hope for to give us a clean supply of milk. The advocates of certified milk have spent years in producing a system that does not amount to much except in conjunction with pasteurization.

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Instead of the old system of cleaning dairy cows with curry-comb and brush, vacuum cleaners are being brought into use with beneficial results. Such cleaners may be used each morning before milking

starts. They are far quicker and do not scatter dust over the stables.

• • •

No individual of ordinary intelligence would think of contaminating a private water supply, such as a well or cistern. He would realize the need of keeping this undefiled. If he did not appreciate the sanitary need he would unquestionably be moved by a sense of decency. There is no question of the truth of this, yet municipal officials and the heads of private enterprises will pollute the water of streams with sewage and noxious and poisonous acids, knowing at the time that the water supply for themselves and their fellow citizens is drawn from this source. They may make the point that the water will be purified by a filtration plant, but the absolutely safe filtration plant is seldom found while in a majority of cases the water of streams is pumped into the mains practically as it comes from the channel.

• • •

Such water is an active source of typhoid infection. Not only does it threaten this danger but it also menaces the general health because of its impurity. No person may drink impure water for any length of time without a debilitating effect. This may not show in an attack of typhoid nor in any other illness, yet the individual will suffer.

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Time was when health departments charged pneumonia almost solely to the hibernating habits of the average flat dweller. But in the light of recent studies and observations, it must be admitted that for danger from foul and germ-laden air, the cars on many city transportation lines have the steam-heated, unventilated flat backed off the map.

• • •

The next time you go into a place where the air is still and quiet, where no drafts are felt, notice how quickly you become heavy, "logy," sleepy, yawny and then get a headache. On the other hand, a breeze in summer or winter stimulates you; does it not? Drafts of pure air are invigorating.

Drafty places are healthier than unventilated places. There is less pneumonia in them. But ventilation which brings about proper circulation of air with the elimination of direct draft, is better still.

• • •

The housing problem is largely a health problem. Here is a hovel or a shack or a disease-breeding tenement. It is a nuisance and the board of health so declares it. Then what? It should be abated. No man has a right to maintain a disease-breeder in a community.

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As a rule, after notice to the owner, the nuisance should be torn down, removed, reconstructed, repaired—some method adopted to protect the community from its vile and vicious influence. The doctrine of personal rights does not shelter a public enemy, as every man is, who persists in keeping up a disease-breeder.

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One of the few known public school sanitary clubs is that called Junior Volunteers, started last month in Oakland, California. The object of the club is the betterment of sanitary conditions, seeing that school buildings and grounds are kept clean, and other matters of general interest to the school. The idea is a good one and might be adopted with advantage to the general health of communities in many parts of Canada.

• • •

The advice usually given in incipient cases of consumption, that the patient should give up indoor work and take up some outdoor occupation, is often detrimental. If he be successful in obtaining outdoor work, he usually earns a smaller wage, and thereby loses vitality on account of not being able to procure proper nourishment. It would be better for him to keep to his indoor employment, but to sleep under the best possible conditions at night.

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Care in the use of one's clothing that it be not cold and damp, keeping the feet well shod, attention to the working of one's physicial body, and getting fresh air in plenty is one of the very best ways to secure and retain health.

Library, Laboratory & Clinic

Bacteriology of Commercially Pasteurized and Raw Market Milk: No more important work has there been for a long time within its line than that published in December by the United States Bureau of Animal Industry — the investigation by S. Henry Ayres, basteriologist, and William T. Johnson, Jr., scientific assistant, on the "Bacteriology of Commercially Pasteurized and Raw Market Milk." From the commercial questions of bacterial activity to the medical ones of digestibility of the pasteurized product there have been diverse opinions of seemingly authoritative men, and what investigation has been possible has been the nibbling about the edges of one of the most important questions of the day. These two men have been able to take on a larger and broader plan, the consideration of how pasteurized milk behaves, and have upset the conclusions that have hitherto been prevalent. They show that pasteurized milk always sours and that the belief that the process may be a cover for any old, dirty milk that a farmer or a contractor may choose to pass through it, is not going to be acceptable. The argument will no longer hold that pasteurized milk will putrify before it sours and that "nature's danger signal," in the souring, will not be available. Another supposition that can no longer be maintained is that in the pasteurized milk the bacteria will multiply enormously fast, because those that tend to hold the others in check have been destroyed in the heating. These two matters are of import in the use of a milk that has been heated, for they establish an entirely different relationship between this milk and the public health.

The investigation, which was made with milk taken from the regular supplies of Boston, New York, Washington and some smaller cities, adopts for its system the holder process of pasteurization (140 to 150 degrees for twenty to thirty minutes) and bases its results on such a system alone. The "flash" method, in which there is a very short exposure to a high temperature, seems not to be practicable and in commercial work, according to these authors, it is doubtful if a temperature higher than 150 degrees Fahr. will ever be used. The higher temperature, it seems, is liable to injure the cream line, a cooked taste may be produced, while the cost of pasteurization is increased by the need of more steam.

In their consideration of the subject the authors note that much further investigation is needed to clear up all of the points.

The pasteurization that Messrs. Ayers and Johnson recommend is 145 degrees Fahr. for thirty minutes. This will be sufficiently high to afford protection against pathogenic or disease bacteria and yet will probably leave in the milk the maximum proportion of lactic-acid or souring bacteria and the group proportions between the different bacteria will be similar to those in the usual grades of raw market milk.

The investigators realize that some degree of infection must come to pasteurized milk during subsequent handling, for there are here tanks, pipes and the cooling apparatus, to say nothing of the bottling process; so they made a special consideration of this matter and report that the results show this infection to be very small. With reference to the claim made by very reputable observers that bacteria increase faster in pasteurized milk than in raw milk, Ayers and Johnson note that such comparisons have usually been made in milks of very different original bacterial content. Placing the two kinds of milk on the same initial basis they find the increase in them to be about the same when the temperature conditions are the same.

And also, while it is true that much research is needed to determine the thermal death points of pathogenic bacteria, and the survival of certain strains of the lactic-acid bacteria suggests the survival of strains of similar tenacious pathogens, the two cases are practically very different. It will undoubtedly be possible to isolate strains of the typhoid bacillus that are heat resistent, but the possibility of such strains existing does not in any way detract from the value of pasteurization as a protection

against them. The reason for this is that there are never more than a very few pathogenic bacteria present in milk, and the possibility of heat-resisting strains among these must be infinitely small since they form only a minute percentage of the whole.

Points in Dental Inspection: 1. The early age at which dental caries is found makes it absolutely essential that, for school children, inspection and treatment should begin with the youngest.

2. To obtain the greatest possible benefit from the work and for the money expended, attention should be concentrated upon the "six-year" molar.

3. To maintain dentures made artificially sound in good condition, periodical examinations should be made.

4. The teaching of oral cleanliness, and the use of the tooth brush, should begin in the infant schools.

Ventilate the House: Why is it that so many housekeepers who see to it that their houses are spotlessly clean, with nary a speck of dust nor mud, do not appreciate the value of clean, fresh air in the home? In the summer, when one is glad enough to open the windows, proper ventilation is an easy matter; but when the cold breezes blow and the coal supply is not unlimited, the housewife seems to think if the bedroom windows are open for five minutes in the morning this will supply enough of the life-giving ozone to stock the house for the day.

To begin at the bedroom. It is the idea of most housewives that to turn the bed covers back for a few minutes before the open window will sufficiently air the bed. And such is the idea of many of us. But the covers should be spread over two chairs by the window and the mattress turned back. These should be aired well before making the bed. Every window in the room should be opened, and, in fact, one window, in lieu of other ventilation, should be partly open all the time except when a storm would drive through.

In the kitchen the frequent opening of the outer door, generally lets in sufficient fresh air, but the living room is a different matter. One plan is to have a carpenter make a 2-inch board to fit across the outer sill so that when the sash is closed down it meets the board. In this way there will be a space between the upper and lower sash in the middle of the window, which will permit of sufficient fresh air entering. If varnished, the same as the other woodwork, this will not mar the appearance of the window.

Public School Physiology: Detroit has what is considered one of the finest courses of physiology taught in the public schools of any city, embracing many features, such as civic hygiene and school hygiene, that no other cities touch. The course is begun in the lowest grades and continues through the eighth.

The following is quoted from the introduction to the outline of the physiology course from which the teachers work:

"The special purpose in teaching physiology and hygiene in the elementary grades is to help the children to form right habits of living. Experience has clearly shown that the young are influenced much more by example than by precept. For this reason the teacher should strive to avoid all preaching, if his instruction is to be effective.

"The topics outlined are not intended to form a logical course of study in physiology and hygiene. The aim is to help the pupil to intelligently interpret and understand some of the more external phenomena of the human body which may come under his notice and to direct his attention to some of the simple laws of hygiene which underlie right living. It is not believed that a child can form habits of cleanliness and temperance simply through learning why cleanliness and temperance are desirable and necessary. It is hoped, however, that such knowledge may tend to prevent the formation of bad habits and to reinforce and strengthen good habits when they have been formed.

"There are many phases of physiology which should not be touched upon in the primary schools. Too much introspection on the part of children is not desirable. The topics studied should, as far as possible, be those which will satisfy the natural curiosity of a healthy child-mind.

"Teachers should always be ready to seize upon a favorable opportunity to teach a

subject. If a pupil is struck in the eye by a stone, the time is opportune to talk about the eye and the value of sight. If a child injures his foot upon a rusty nail or a tin can, it is fitting that the teacher immediately discuss the proper cleansing and care of such wounds. This would also be a favorable time to impress upon the children the danger of carelessly throwing glass, tacks, tin cans and like articles upon the playground or upon the public highway.

"The State law requires every teacher to instruct his pupils upon the effects of alcoholic drinks and narcotics as well as upon the most approved methods of preventing the spread of contagious diseases. To comply with these legal requirements without violating the generally accepted laws of pedagogy makes an unusual demand upon the good sense of the teacher. We must comply with the spirit of the law, but in the lowest grades at least the instruction along these lines must be very general in its nature. Little children are extremely susceptible and there are many things in the field of physiology and hygiene of which a child should not be made conscious until much later.

"The instruction should seek to make the children temperate in everything—in eating, in drinking, in playing and in all of life's activities. The lesson of moderation is a most valuable one. In discussing the effects of tobacco and alcoholic drinks the teacher should be moderate and restrained in her statements and her teaching should not be swayed by sentiment. It must be borne in mind that there is much honest difference of opinion regarding the use of alcoholic drinks and that in many homes the children see these beverages on the table regularly. In view of this fact teachers must be conservative and tactful in presenting these subjects and must confine themselves to a strict statement of facts.

"Physiology and hygiene are to be taught at least one period each week, at such time as the teacher finds most convenient."

Human Germ Carriers: It is known that there are men and women in perfect physical condition who carry and spread the germs of typhoid and therefore are dangerous. An unfortunate rival of the famous "Typhoid Mary" has been discovered in the person of an Adirondack guide, who was found to be the unconscious cause of a typhoid epidemic in an Adirondack camp last summer which caused the death of two persons and the illness of thirty more.

It appears that the source of the infection was discovered only after a patient and difficult search, and the man has been placed under a treatment in New York, which, it is hoped, will rid him of his germs and prevent him in the future being a danger to the life and health of any person with whom he may come in contact. There was no law under which he could be restrained, but he expressed his willingness to be isolated and take any treatment that was advised, which proves that he is a very decent fellow.

Hints re Pneumonia: The season is at hand when pneumonia is most prevalent. Statistics show that the disease is most apt to occur during periods of greatest vicissitudes of temperature and humidity. While exposure to cold is incapable per se of giving rise to the disease, the condition known as a "bad cold" acts as a pre-disposing cause, rendering the patient more than ordinarily susceptible to pneumonic infection. The disease being infectious, and by some authorities regarded as contagious, the mode of infection probably being by inhalation, persons should be extremely careful when in contact with those having the disease, and more especially so when one has a cold. Wear warm clothing, avoid extreme changes of temperature, keep your home, and especially sleeping rooms, thoroughly ventilated both day and night. It especially behooves those who have had a previous attack to use every precaution, as one attack rather predisposes to a second.

Typhoid Vaccine in the United States Army: So convincing have been the experiments made by the United States army surgeons with typhoid vaccine as a preventive against typhoid fever that the chief of staff, Major General Leonard Wood, has issued a general order looking to the vaccination of the entire army, if possible, with this vaccine.

The administration of anti-typhoid serum, as now practiced, is harmless. The protective value of this measure has been fully demonstrated, as shown by reliable statistics.

In order that the United States army may, as far as possible, have the benefit of the protection thus afforded, and enjoy immunity from the disease, commanding officers throughout the service are enjoined to use their best endeavors to bring about the voluntary acceptance of this prophylactic treatment by all officers and enlisted men and by all civilians resident at military posts, except those over 45 years of age and those known to have had the disease.

In case of an outbreak of typhoid at a post, compulsory vaccination of the entire population, including the families of the men and civilians, may be had in the discretion of the department commander.

Gould on Cancer: Sir Alfred Pearce Gould, senior surgeon to the Middlesex Hospital, delivered in December before the Royal College of Surgeons of England the 29th annual Bradshaw Lecture. He chose for his subject "Cancer," saying in substance that the disease, as recently discovered is not limited to man, but occurs in all vertebrate animals and can be transferred from "host to host," but seemingly not to an animal of another species, a cancer cell being not an alien cell, but influenced by its neighbors as a normal cell is. Cancer he defined as cell life that is disorderly from some as yet unknown cause.

Sir Alfred expressed the opinion that clinical experience and experimental pathology throw some ray of hope across the dark sea of malignant disease. The deep impress of the primal laws of development holds the cells of tissues in true and loyal obedience to the very end in the almost infinite majority of cases and in the large majority of individuals. The incidence of disease and immunity from its initial attack are of course complementary, and the same fact can be expressed either in terms of disease or in terms if immunity. This apparently is the great initial fact of cancer—immunity; that in spite of added years, and of all unfavorable conditions which tend to wear down the obedience of cell activity to fundamental laws, 90 per cent. of men and women who pass down the hill of life hold this dread enemy at bay.

There is, he said, cure of cancer apart from operative removal. All therapeutic cures are obtainable only by the working of physiological — perhaps psychological — forces, and the first hope of therapeutic success comes from observation of the efficiency of unaided Nature to accomplish cure.

Sir Alfred's final opinion was that when the biologist shall know the laws that govern cell-growth, with a knowledge akin in its sweep and accuracy to that of the astronomer, he will have power—the power to prevent, to control, and to cure cancer.

Diagnostic Points: Scarlet fever.—Early symptoms are lassitude, vomiting, sore throat and fever. Redness in back part of mouth, "strawberry tongue," glands near angle of jaw are swollen. Usually within 24 hours a fine red rash appears and soon spreads over the entire body. The eruption is red and uniform, as contrasted with the blotchy, irregular eruption of measles.

Measles.—Usually begin with drowsiness, fever, eyes inflamed and sensitive to light, symptoms of cold, sore throat, sneezing and coughing. These symptoms may increase until the skin eruption appears, usually starting on the face, especially the forehead, and spreading over the entire body. This eruption consists of small red spots, irregular and blotchy in character.

Diphtheria.—Pain, fever, cough, soreness of the throat usually mark the onset of diphtheria. The throat soon becomes inflamed and small spots, grayish white or smear colored, appear on the tonsils or in the throat. These spots enlarge, coalesce and a membrane is formed which may cover some or all the surface of the tonsils or throat. This membrane may be lower down in the throat, or above in the nose.

Whooping cough.—This may at first simulate a slight bronchitis or ordinary cold, lasting from one to two weeks, when the second stage appears. The cough changes its character, becoming paroxysmal, and the long inspiration and whoop are heard, or there may be a series of explosive coughs followed by a noisy whoop.

Chicken pox.—The eruption is usually the first sign of this disease, which may be associated with slight fever. The eruption, which consists of elevated spots, varying in size from a pinhead to a large pea, generally appears on the face or back and extends over the body.

Open Mail

To the Editor, Public Health Journal:

Preventive Measures.

Sir,—Consumption is a disease of civilization. The coddling habits we have got into, resulting in living in rooms with no ventilation, breathing impure air day and night, have resulted in ninety out of every hundred people being unable to breathe sufficiently for the imperative needs of the organism. Nasal congestion, as a consequence, is rampant. Medical school inspection finds that many school children are suffering from some form of it, and especially from adenoids. Surely that one fact gives the key to the whole situation. The first step, then, is to get at the children. Medical examination must be brought to its logical conclusion. Nasal congestion must be relieved, and the children taught to breathe correctly.

I am prepared to maintain that consumption, in the first place, is due to insufficient oxygenation of the blood, due to inability to breathe properly. The freeing of nasal congestion can be accomplished without operation in all but such cases as a spur of bone obstructing the passage. With freed nostrils nasal breathing will be easy, and burn up the carbonaceous waste in it. Then the bacillus will beat a retreat. No person breathing fully and freely can ever suffer from consumption.

Hygiene must be taught in schools, compulsorily, by competent teachers. Where it is taught now it is done in a happy-go-lucky way that is of very little use. Correct breathing exercises must be given in all schools, public and private, and the teachers of this must themselves first be taught in the right way. There should be compulsory adequate ventilation of all rooms, public and private, and of all theatres and other places of amusement, and all churches. The last are the worst offenders; in the city of Toronto I have often found the leading churches so rank with foul air as to be absolutely stupifying. Carpets in bedrooms should be banned, and cork linoleum and rugs substituted. Windows should be always of a kind that will open top and bottom, not the absurd casements prevailing at the present time. There should be a few minutes' interval after every hour in a school-room, and the room thoroughly aired before another class is taken. Lectures should be given in all schools, public and private, on the simple needs of the body in regard to air, light and bathing. From experience I can say that these lectures can be made exceedingly interesting.

Until these things are done compulsorily there will not be the quick stamping out of this fell disease that there might be. People are too ignorant, too lazy, and too prejudiced to make changes. The discovery of almost universal nasal congestion is the greatest that has been made in the history of consumption. It is far more important than the bacillus; and correct breathing is of far greater moment than inoculation by tuberculin, which is a distinctly retrograde movement in this crusade. I must not trespass further upon your space, or I could say a good deal about the faults of the sanatorium system, and how they might be corrected. Were the open-air cure carried to its logical conclusion, ten times as many patients could be treated as is now possible under the present very unsatisfactory conditions.—I am, &c., J. W. W.

Championing the Cat and Dog.

Sir,—It is nothing new for any intelligent and thinking person to be told that the average prowling dog and cat is not a safe companion for children nor a proper inmate of our homes, but the writer begs most emphatically to take exception to the opinion of the learned specialist who places all of these faithful fireside companions under the ban.

Take, for instance, the beautiful Persian and other fine breeds of cats which adorn so many homes these days and also are to be found in many of the fine catteries of cities. They never see the outside of homes unless in harness or carefully guarded; must they, perforce, be banished from the face of the earth because the prowlers are dangerous? Will the learned

doctor be a little fairer and discriminate between those that are dangerous and those that are not? It would seem, were these family pets to be entirely eliminated, as if there would be a lack of the home environment of which poets have for so many years sung. Leave us a few just a little longer, doctor, for there are many among us who love dogs and cats and need them for friends. S. E. K.

To Get Good Ventilation.

Sir: For the "comfortable" ventilation of a street car, the following mode will give desirable results: Open one ventilator on each side at front end of car. Open two ventilators on each side at rear end of car. Fasten all the other ventilators. Thorough "overhead" ventilation is thus secured, free from the objectionable "lower draft." If the animals with the blacksmith bellows lungs cannot then get enough air, they can always obtain the desired amount "behind" the rear platform. There is no reason why one or two cranks should be allowed to get "air" by giving everybody else the "breeze." As a further source of comfort, orders should be given to the motorman to close the "exit" door before starting the car. The practice now is to let in a carload of icicles after he has started, before closing it. HAF FROAS.

Properly Housing Separators.

Sir: The use of the separator is no longer an experiment with the farmers and dairymen, as most every farmer keeping two or more cows is using one at the present time. In order to secure the most efficient work from the farm separator, and in order to have the cream pure and in the best possible condition it is necessary that the separator be kept perfectly clean and in clean surroundings. Of the cow stable, corn crib or kitchen, the latter is the most desirable, but is no place for the machine, and for several reasons: first, because it is in the way; second, the temptation is strong for the housewife to take charge of it and of the process of separating, and this is not a fit task for her, as it requires more strength to operate the separator than she can spare from her other duties of household and kitchen work; third, there are odors in the kitchen that should never come in contact with the separator and especially in the winter when the ventilation is somewhat close and imperfect these odors are apt to be noticeable in the cream and butter. The cow stable and corn crib are alike unfit for perfectly obvious reasons. Then the question is, where shall the separator be kept? The ideal place for the separator is in a room built especially for the use of the separator and cream. If a concrete floor is put in this room so much the better, as it will be much easier kept clean and sanitary. My separator room is built adjoining the cow stables with an entry or hallway between the two with swinging doors at each end of the hall. These doors swing both ways and prevent all dust or litter from getting into the room. This room being close to the stables makes it convenient for taking the milk direct from the cows to the separator. Of course it is necessary to have warm water in this room and by running a one-half-inch gas pipe from my feed cooker into the water tank or rather a sink that is in the room it is an easy matter to heat the water to whatever temperature desired. I also have an ice box in the room and in this I keep my cream until deliveries are made. All of this equipment can be provided without much outlay of actual cash. The work can be done by almost any practical farmer, and the expense for material is about all the money one needs to be out on such a building, and this expense is but a trifle when you take into consideration the advantages such a room will provide in handling the daily product.

A SUBSCRIBER.

The Duty of the Sanitary Inspector to the Community.

Sir: The duties of the sanitary inspector to the community are many, and are surpassed by those of no other officer. He, first of all, should thoroughly post himself as to his duty, and the law governing the same.

He should go to the people as a teacher goes to his pupils, with a full determination to patiently and thoroughly teach them what they should know.

He should be courteous, never forgetting that he is a gentleman; kind and sympathetic, remembering that it is easier to rule by kindness than by force.

Above all things he should be just, treating everyone as nearly alike as possible, at

the same time he should be firm, insisting and seeing that his instructions and orders are carried out.

He should try to make friends of the people in his territory, remembering that all men are presumed to be law-abiding until the contrary is shown.

A man who carelessly or thoughtlessly violates a law is not a criminal and should not be treated as such.

The sanitary inspector should be a hustler. He should cover the territory assigned him thoroughly and not in spots. He should give all his time when on duty and take an interest in his work and the welfare of the people in the community in which he is serving.

He should, if there be a public or private school in his community, keep a close watch over its patrons and take prompt action when any disease or suspected disease shows up.

Another duty which I should have mentioned before is that he should be frank with everyone. If a person fails to carry out his orders he should first ascertain, if possible, the cause of such failure.

With the few men which our health department have it is utterly impossible for the sanitary inspector to give the community the service it should have, owing to the large territory and the further fact that so few of our citizens are in sympathy with our work.

Our citizens need a sanitary teacher more than they need a sanitary officer, although I do not wish to leave the impression that it is never necessary to make an arrest.

The praise and the reward should not go to a man merely because he makes a number of arrests. Arresting, as a rule, does not leave as much respect for the law as can be obtained otherwise.

A sanitary inspector must remember that the community does not, when he makes a mistake, place it wholly upon him, but place their criticism upon the head of the health department, therefore we must be conservative. W. R. A.

A Traveller on City Smoke.

Sir: Many European cities, unlike cities of America, are clean and free from soot, because the laws are enforced. There one wakes up clear-headed and fresh. Here in the majority of cities one finds the voice husky and the brain listless, because all night the lungs have been inhaling smoke. There, women shoppers have not the fatigued look that one sees among the customers in our large stores, nor the streaks of dirt that so often mar our women's faces.

It causes fatigue and lack of endurance. We as citizens have the right to our health and energy, and they are being taken away from us. The overlords of centuries ago came down from their strongholds and took the people's possessions; but our overlords, puffing clouds of smoke into our lungs from their chimneys, are taking away our health and vitality—the most precious of our possessions.

The anti-tuberculosis organizations should take up this fight against smoke, which has so much to do with breaking down the resisting power of weak throats and lungs, and the skin and cancer hospitals should take up the same matter.

It is a matter of common knowledge among physicians that city lungs are black, as compared with the healthy pink of the lungs of country or town dwellers. Hardening of the lungs is one result of the blackening process.

There are places in Switzerland where the air is so pure that the best means of healing wounds is to expose them. Compare that with our smoke-laden atmosphere, and see how hard it must be for nature to do its proper work.

Our smoke wastes coal, money and public health. It wastes human life. The enforcement of the smoke laws would mean economy, improvement of property and increase of individual energy. We must create a public sentiment to force the servants of the law to enforce the law. Our non-enforcement of our laws tends toward anarchy. T. B

Meetings and Reports

The Canadian Forestry Association.

The Commission of Conservation meets on January the 17th in Ottawa. During the following three days the Canadian Forestry Association will hold a convention in the same place; this arrangement being most convenient as the members of the Commission are also interested in or are members of the Forestry Association.

The chairman of the Commission, the Honurable Clifford Sifton, will propose the organization of a fire-fighting and a fire-preventing corps after the plan of a mounted police force. It is undoubted that millions of dollars worth of timber are annually destroyed by fire on this continent, and it behooves Canada as apparently the last refuge of the natural forest in America to do all in her power to adequately preserve this magnificent resource.

Afforestation where practical is also most desirable, and this is another of the aims of the Canadian Forestry Association.

Conference of Health Promoting Institutions.

Last month a Conference of Health Promoting Institutions was opened by the Lord Mayor of London, England, at Guild Hall. The Conference was organized by the National League for Physical Education and Improvement.

In welcoming the delegates the Mayor discussed the evolution of public health in England, pointed out that the whole conception of the nature and sanctity of human life had undergone a complete change since the days of "Hardy Forefathers."

We had now grown to realize that they were "hardy" because none but the hardy lived. Those forefathers of ours might have been entitled to say of themselves, as, indeed, they did say in a State paper in 1515 preserved in Guildhall, "What comyn folk of all the world may compare with the comyns of England in riches, freedom, liberty, welfare, and all prosperity? What comyn folk is so mighty and so strong in the felde, as the comyns of England?" We were told they were fed on "great shins of beef" until they became, as they were described a little later, "the English wild beasts." For centuries, however, they increased in numbers, but slowly. The terrible law of natural selection, which issued in "the survival of the fittest," cleared off the less physically fit in every generation—principally by infantile disease, and often by wholesale famine and pestilence. At best their lives were but little above that of the animal. It was against that stunted conception of human life that civilization waged its unceasing warfare. All the legislation which had grown out of the regulations framed by the early City Fathers to protect the people against the ravages of epidemic disease had proceeded to establish the idea of duty resting upon the individual and upon the community to perceive and to obey the laws which governed the conditions of physical health, not only for the individual, but for the vigor of his offspring. The sudden and unprecedented change brought about in the early years of last century by the introduction of steam and the extension of commerce, with its general ease, and its reduction in the burdens of life, produced an enormous increase in the population. Millions of fresh human beings found employment and brought up families, who, in their turn, learnt to live more or less civilized lives. A new phase of humanity brought with it new modes and conditions of life, new vices, and new dangers, with also new conceptions of duty, and of how that duty should be performed. From those early beginnings and rudimentary forms, had grown the branches of special knowledge now embraced by the modern professions of medicine, surgery, and sanitary science. The various health societies which had grown up alongside those professions represented the one and self-same beneficent purpose of promoting the enjoyment and extending the duration of human life. Foremost in the ranks of these noble institutions stood the societies of their hospital and home nurses; the bodies which trained inspectors, male and female; and that later creation, the corps of health visitors, who

carried a knowledge of the laws of health into the homes of the people. It was a striking feature of the development of modern medical science that it had divided itself into the two great branches of study and practice which severally related to the curative and the preventive sides of the subject. It was infinitely gratifying to find how constant was the effort of the profession to advance measures of all kinds tending to prevent disease and secure conditions favorable to the preservation of health and physical vigor. It had been well said that to gain experience in the office of health administration, was to receive an abiding impulse in the service of humanity. The accumulated experience which was represented and would be circulated through the conference of so many health societies might well tend to extend and strengthen that service.

The Fife Committee on Medical Inspection.

At a meeting of the Fife Committee, of Scotland, with regard to the medical inspection of school children, held last month, Provost R. C. Munro Ferguson, M.P., criticized Dr. Dewar's reference, as Medical Officer in his report, to the examination of senior girls, which he described as an attack upon the members of the Committee and a breach of discipline.

Provost Ferguson said he had had considerable experience in the work of Local Authorities, but it had not hitherto been his experience to find any official making an attack upon the opinions expressed by members of the representative authority. Their original policy was to have a lady doctor, and the burghs joined upon that understanding. That idea was unfortunately checked, but it still remained an open question, and ought to remain an open question. One of the reasons given by those who believed in a lady doctor being upon the staff was that it would be better that the senior girls should be inspected by a woman rather than by a man. The Medical Officer, Dr. Dewar, interpreted this plain matter-of-fact statement into a suggestion of innuendo against the medical profession. That was an insulting attack. Further, he considered the insertion of the paragraph in question a breach of discipline. Dr. Dewar concluded the paragraph by sincerely trusting that such unpleasant innuendo would never be uttered again. He (Provost Ferguson) sincerely trusted that no official would be guilty of breach of discipline in publishing a paragraph of that kind. A vote was taken on the question and it was resolved that the paragraph be deleted.

New York City Consumers' League.

The Consumers' League, of New York, under whose auspices an exhibition of articles made in sweatshops was held in that city last month, placed before the public a vital picture of the dangers encountered by women and children who work upon different articles of wearing apparel for low wages.

The walls were hung with garments made in long hours by little children and their mothers, and there were photographs of the workers showing the surroundings compelled by the little they earn.

Beneath a huge black willow plume was a placard telling that little children are employed in the work of making willow plumes because their small fingers can tie the delicate fish knots required in the work. A mother and two children who can make a plume a day receive one cent for every forty-seven knots.

Under different articles of apparel were placards, nearly all of which declared that the workers labored fourteen and sixteen hours a day to earn less than a dollar.

Upon a wall were three pink paper carnations. The daily output of the worker is 100 flowers, for which she gets 40 cents. Nearby was a necklace of pale blue beads. There were sixty-one beads of eight sizes with a clasp attached. The maker works twelve and fourteen hours for 45 cents. The pay is 30 cents per dozen necklaces.

There was a baby's crocheted jacket with the information that the worker put in sixty hours a week, finishing up her labors with an output of two dozen jackets, and had been paid $1 for the seven days.

Above a celluloid hairpin encrusted with brilliants was a sign reading "Dangerous Work." The woman who works over her gas stove setting the stones in the soft material imperils her life as she sets 105 for two and one-half cents.

Other signs on the walls urged those who wished to aid in the work of bettering conditions for children to join the forces of the Consumers' League.

Association of Life Insurance Presidents.

The Conference of the Association of Life Insurance Presidents, held last month in Chicago, dealt largely with Public Health affairs.

Three papers were presented on the question of prevention of disease, a question which is receiving much attention in connection with the international campaign of conservation. Dr. Eugene H. Porter, of Albany, State Health Commissioner of New York, the first speaker, commented favorably on the milk and other campaigns being waged in Chicago under Health Commissioner Evans. Dr. Porter noted progress in fighting tuberculosis, typhoid, diphtheria and similar diseases, but held that only the skirmishing forces had met, and that much is yet to be done. Cancer, Bright's disease and blood diseases need more attention, while the typhoid death rate is still appalling in places where little or no attention is paid to the water supply.

Dr. Porter held that the life insurance companies could wield a powerful influence for prevention of disease with more than one-half of the population of the country, and outlined a plan of campaign for them to follow through health bureaus and education of policyholders, and co-operative action with local and national authorities.

George E. Ide, President of the Home Life, reported progress for the Life Extension Committee on the question of prevention of disease, though the Committee had been forced to reject some plans proposed for united action. Mr. Ide supported some of the recommendations of Dr. Porter; the Committee recommended the establishment by the Association of a Health Bureau to gather statistics as to what is being done to improve sanitary conditions and prolong life, and that the Officers of the Association lend their support to all such work so far as possible and to a national health bureau.

A paper on "Modern Sanitation," prepared by Dr. Alvah H. Doty, Health Officer of the port of New York, was read by Dr. Knight, of the Metropolitan Life. It dealt with methods of transmission of infectious diseases, showing that clothing transmits little infection, and money does not carry infection, as generally supposed. Dr. Doty held the mosquito is the chief spreader of infection and its extermination is essential. Infected water and milk transmit disease, especially typhoid, and anyone coming in direct contact with an infected person can transmit disease even though unaffected himself. Dr. Doty also discussed methods of sanitation and disinfection, arguing that they constitute the most effective means of preventing disease, but should be under the control of competent medical officers.

It was resolved that the Association devote its energy toward the adoption of suitable courses of study either in the regular curriculum of vocational schools or in the elective courses, or in the summer schools, or post-graduate work, as will best prepare those men or women, who may make the business of life insurance their life work; and, also, that the Executive Committee be instructed to invite the attention and the consideration of colleges and universities to the advantages to be derived from the introduction of such courses of study as herein outlined.

New York Conference on Milk.

The conference on the milk problem that was held in New York City in December last brought together an audience of some hundreds and a group of speakers, including some of the best authorities from Canada and the several States. The New York Milk Committee itself, which called the meeting and conducted it, has for its chairmen of sub-committees such men as Charles E. North, M.D.; Stephen Francisco, President of the United States National Association of Certified Milk Producers, himself an important milk producer in Jersey, where he has been at work in the attempt to improve the supply through conferences with the farmers and the offer of special prices for clean milk; Dr. George W. Goler, of Rochester, whose name is famous wherever there are discussions on milk; John Spargo, whose writings on the subject are well known; Dr. Henry L. Coit, President of the American Association of Medical Milk Commissions, and Dr. John Amyot, Provincial Bactereologist of Toronto. The meeting included four sessions: one on "Milk Economics," with Stephen Francisco presiding; one on "Public Milk Supplies and the Public Health," with Professor William T. Sedgwick in the chair; one on "Milk Standards," with Dr. Ernest J. Lederee, Commissioner of Health of New York City, for chairman, and the fourth, on Milk Com-

missioners, with Dr. Coit to care for it.

Dr. John Amyot threw a sort of bombshell into the meeting, when he suggested that he is beginning to doubt the safety of certified milk. He had much to say about the carrying of tuberculous infection and the preventing of such infections. Thirty-five inspectors are too few to do this. One cannot depend upon the local Health Officer to notify about sickness on the farm, and cases have been known where two weeks intervened between the sickness on the farm and the notification to the consumers of the milk.

The radical advocates, however, of the pasteurization of milk and the wholesale tuberculin testing of cattle were defeated in their efforts to capture the Conference Composed as it was of scientists, producers, dealers, health officials of important cities, both in the United States and Canada, the Conference was considered a most representative one as far as continental opinion is concerned.

American Civic Association.

The sixth annual meeting of the American Civic Association was held in Washington on December 14-16. A large percentage of the 2,500 members were present, and questions of much Public Health importance were discussed.

One of the tenets of the Association is that the whole country should be led to join a movement for parks wherever there are people who need them and where human life, animal life and forest life may be conserved. City planning and improvement are other works of the Association; and the Association has demonstrated that cities which have shown the greatest civic improvement have been the cities that have had greatest growth.

The American Civic Association was created in St. Louis, in the days of the Louisiana Purchase Exposition by the union of two existing organizations, the American Park and Outdoor Art Association and American League for Civic Improvement, and since then among other undertakings has fought strongly against the commercialism that would have turned Niagara into a barren cliff. The Association has also taken up the question of such public nuisances as smoke, billboards, injurious insects, and espouses underground wires for electric lines, public comfort stations and garden schools.

Seldom ever was any knowledge given
to keep, but to impart: the grace
of this rich jewel is lost in
concealment.—*Bishop Hall.*

SIR LAUDER BRUNTON

Largely instrumental in the inception and continued success of the International Congress of School Hygiene, the next meeting of which will take place in Buffalo in 1913.—See page 58.

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Special Articles

UNEMPLOYMENT FROM THE HYGIENIC STANDPOINT

By DOCTOR RAMBOUSEK, ROYAL DISTRICT MEDICAL OFFICER AT PRAGUE.

In the literature of unemployment, its causes and prevention, points which appear to me to be important, are only lightly touched upon and indeed not in any way discussed in most of the comrehensive works on the subject. The sad results of unemployment on the health of the community are well known and have been often discussed. It is not necessary to prove that unemployment and consequent deficiency of earnings, mean want, and that the sufferer lacking the very necessaries of life is unable to give hygienic matters any individual attention. His constitution is weakened by insufficient, hap-hazard nourishment, and his power of resistance to the unhealthy conditions of living—in which circumstances place him—is diminished or completely broken down. Hunger, bad air, dark overcrowded dwellings, indifference in matters of cleanliness, indifferent care of children, and neglect and moral corruption of youth, plant the seeds of organic diseases, or supply an opportunity for the spread of contagious sickness and plagues. The children of the poor and impoverished, are carried off in tender years by infantile diseases and contagious sickness. Rachitis and scrofula demand the most numerous victims and make cripples of many. Veneral diseases flourish amongst adults, tuberculosis especially empties the ranks of those who suffer from unemployment and insufficient earnings.

But it is it not of the terrible results of unemployment and its significance in relation to hygienics which are sufficiently well known that I now desire to treat; nor yet do I wish to discuss the hygienic measures, such as improvements in dwellings, the war against tuberculosis,, adequate care of children, and so forth, which tend to ameliorate these results. Let us turn to the causes of unemployment and there seek for points which hygiene (the public care of health) can attack. We may thus grapple with the evil at its source instead of merely attending to its bad results.

One of the important causes of innocent unemployment which we are discussing, lies, speaking generally, in the physical in-

Read before the International Conference on the Prevention of Unemployment, Paris, 1910. Translated from the German for THE PUBLIC HEALTH JOURNAL, by Ernest F. Gunther.

capacity for the occupation selected by or forced upon the individual by external circumstances.

This point plays a decisive role in regard to business application and business energy of the most differing classes of people and is often the reason why the individual is not able to fill his place satisfactorily, and why he suffers on account of his occupation so as to quit it or soon end in ill-health or breakdown under it. Physical incapacity is the general cause of sickness incurred in the pursuit of one's employment. No instrument is fit for all classes of work, and no material for every instrustment. If it be not well selected it will soon become dull, soon break. It is well known that everyone is not adopted to be a physician, a sailor, a soldier, a discoverer. Many who might have succeeded in their callings in life have failed because of the physical handicap. It is not necessary to elaborate these ideas to show that through such incapacity many a life amongst the more cultivated classes is threatened, endangered, or destroyed, or loses its hold, and falls into line with the "intellectual proletariat." Much of what we have to discuss concerns these classes. There are conditions injurious to health incident to every or nearly every calling requiring certain physical qualifications to offset them. This is especially so in the work of the laborer, in the narrower signification of the term; here we see the many trade conditions injurious to health, many of them characteristic of and specifically incident to particular trades—conditions of which trade-pathology has much information, and against which trade-hygiene should protect.

We now face an important point of view of our subject, the choice of occupation.

It does not seem to me to be necessary after what has been said to expatiate on the hygienic significance of a proper choice of employment. It plays unquestionably an important role as a cause of involuntary unemployment, and is amongst the sources of the social misery of a part of the working classes. Insurance against sickness protects in an insufficient manner or temporarly only against the physical results of physical incapacity for an occupation, especially as this incapacity does not always mean sickness in a physical sense, or sickness as defined by the laws relating to insurance against sickness. Physical incapacity predicates frequent, in fact, continuous change of location—the incapable workman is discharged and seeks again and again the employment for which he is unsuited until he succumbs. A remedy or at least an improvement in conditions might be devised and prevention might be offered to great social wrongs.

The dangers to which everyone exposes himself in the pursuit of certain occupations or trades are known; they are investigated and studied by pathologists who deal with the conditions of professions and trades. But these dangers to health are not known to the man who devotes himself to an occupation. It has also been demonstrated that certain physical characteristics signify slighter resistance to these dangers, that such characteristics predispose to contracting sickness, that the man who has this predisposition exposes himself to disproportionately greater danger than another in pursuit of any particular employment. Apart from deficient muscular strength, apart from general physical infirmity, it is only necessary to call to mind the often distinctly recognizable predisposition to tuberculosis. For example, a man predisposed to tuberculosis, enters an employment in which dust is raised, and, without taking into consideration the fact that he endangers his fellow workers, infallibly succumbs. The man physically unfit for such employment, however, knows nothing of this predisposition nor of his infirmity—he has besides no opportunity nor reason for informing himself about it before he feels signs of weakness, when in most cases it is already too late.

The remedy may follow two lines: Either by proper instruction about an occupation and its dangers, or by possible proper information about the worker's own constitution and physical fitness for the occupation by means of a thorough medical examination; at all events, by selecting the physically suitable and directing them to the several classes of employment.

What opportunity is there for realizing this and in what manner can it be brought about? The school offers the best opportunity, both for instruction and for the medical examination suggested. Mischler, speaking on the first day of the session of the Austrian Institute for Assisting Labor at Vienna (1907), has already complained of the unregulated, unintelligent choice of

employment and drawn attention to the experiments made at Graz. Results might certainly be expected from the instruction of pupils of the technical schools as to the dangers incident to the several employments, and, at all events, from the examination of pupils by school physicians, as to physical fitness for the employment any pupil might contemplate entering—and, indeed, such an examination in the Public and High Schools and even in the advanced schools with a view to choice of employment would unquestionably be useful even if difficult to carry out. I find additional help in this direction in the reports which have come to us through Krejci, of the assistance to apprentices attempted with good results at Prague. As Mischler has proposed, and, in fact, attempted to do, apprentices and their parents, the managers of orphan asylums and educational institutions, and so forth, should also be informed as to the meaning and duties of the public labor bureaus and labor directories. By means of these institutions special opportunities are afforded to set energentically to work along the lines suggested, and on the one hand to influence those looking for work by instruction, and, on the other, to secure a direct selection by medical recommendation and examination, for example, recommendation of the particular employment for which the labor seeker is suitable. That there is nothing Utopian about his idea, but that, on the contrary, it has been practically thought out and attempted, is seen from a paper in the "Labor News," published by the Labor Institute at Graz (Labor News, 1907, page 28).

The proposition I make is to put to such use the hygienics of trades, and the pathology of trades, that applicants for situations in certain classes of employment shall be examined before being recommended to ascertain the absence of the physical conditions that would be detrimental in the pursuit of the contemplated class of work. There is no doubt but that by this means greatly to the advantage of charitable institutions, to the advantage of relief funds, and of employees and employers, much misdirected assistance might be avoided. Besides, I consider that this method of physical selection, this method of producing a judgment by neutral, impartial officials, would be more satisfactory than a selection made by workmen induced as it would be by varied business influences. It would, no doubt, be made crudely and frequently be mistaken. In the constitution of impartial labor bureaus—I refer particularly to the labor bureaus which are not the tools and machines of a political party organization—in the giving of the most effective and comprehensive constitution to these institutions appears to me to be the gist of these matters. These institutions are by no means to merely register mechanically the openings for employment to direct and assist, they must decisively influence the proper judicious distribution of work and the correct choice of occupation. This will only be possible, if they, being provided with expert equipment, are constituted as genuine public bureaus of information. Naturally—as I have already indicated—only neutral non-political institutions can gain the confidence of the people; and only such institutions can claim, to be assisted by the powers that wield influence and must wield influence over parties and by the Government, the rural and city communities and to enter into alliance and reciprocal relations with them. Such an understanding is necessary. It is not in the least doubtful that these institutions would, under such circumstances, be powerful leavers to improve the health of the nation. The establishment of such institutions would, of course, be of the greatest importance, not only to the laboring classes, but also to the more cultivated.

Special attention is directed, because it is of eminent importance to public health, to the value of co-operation between labor bureaus and general dwelling house agencies. This probably requires no further proof. It is necessary that a man seeking employment should be assisted to the choice of a healthy and adequate dwelling worth the price demanded, and so there is further a connection which I shall not elaborate, between our complex subject and the subjects of dwelling sanitation and dwelling reform which are in the forefront of the socialistic efforts of later times in the direction of hygienics. I content, myself, with indicating the necessarily reciprocal relationship of these problems to the solution of which the establishment of the labor bureaus offers assistance. But the hygienic importance of guiding the selection of employment, the judiciously assisted finding of employment is by no means thus ex-

hausted. It is to be remembered that the directing to employment and public finding of employment make possible hygienic control, which, as in the case of waiters, waitresses, nurses, etc., is of public importance.

But let us return to our subject. Instruction and information, with a view to choice of employment, may in other ways be powerfully assisted. The labor organizations should especially be in a position to develop a decided activity in this direction. Again a general dissemination of knowledge and advice would be possible by means of articles in that part of the press which enjoys the widest circulation, as well as in other publications. An attempt in this direction which has come under my notice is Sommerfeld's Booklet, "The Choice of Employment," in which hygienic considerations and the disadvantages which are to be considered in connection with certain occupations, besides advice as to choice of employment, are dealt with. Moreover, I believe that it would be possible to give attention to hygienic considerations in the analysis and classification of employments or by means of a scientific dictionary of matters relating to occupations, as suggested by Mischler (Labor News, 1907, pages 79 and 204).

Again it would undoubtedly be possible to interest the guilds and labor organizations and unions to assist influentially in the matter of instruction and choice of employment.

The suggestion which also comes from Mischler, to direct large numbers of those possessing special physical qualifications to agriculture regarding them as agricultural apprentices and educating them for agricultural pursuits, is deserving of consideration from a hygienic standpoint.* This plan would unquestionably be suitable, not only to elevate the agricultural class by creating a healthy, sound and strong class of laborers, but would also do much to improve the health of the people generally.

Another method of attacking unemployment, well known and frequently resorted to, is by means of public works, municipal or State; an effort to meet the increasing unemployment by so-called emergency works. After what has been said it is clear that here, too, respect should be had to the physical capacity, the health of the needy as otherwise the evil might readily be increased and the needy injured. We know that these emergency works consist for the most part of building, excavating and so forth, and, naturally, it is not every constitution that is adapted to such work. Selection—at least, of a sort, would assuredly be proper.

There is, besides, another point which I shall at this time only touch upon, of which I spoke at the meeting of the Austrian Institute for assisting labor at Prague, 1908, in support of a report by Furer. Upon the scarcity of suitable work at home there results very naturally the search for work abroad, that is to say, emigration. From a social hygienic standpoint there would be nothing to object to in an international exchange of workmen, I mean workmen suited to the respective requirements, but, as a matter of fact, the practice is very different. It is not necessary to waste many words on this point. The desire to emigrate is cleverly excited, the emigrant is often persuaded by promises and representations of unscupulous agents influenced solely by desire for gain to quit the work which he is accustomed to in his home, the work to which he is adapted and for which he is physically fit to look for a utopia where he often succumbs or deteriorates, physically, because he is not adapted to foreign circumstances nor to work in the foreign countyr, and is carried off under unfavorable climatic conditions by contagious diseases, sicknesses peculiar to the tropics, and so forth. Foreign countries defend themselves in many ways against immigration of the physically unfit, and many a one is turned back and must, because of the health regulations of those countries, return. Of all this the emigrant is for the most part not informed and has scarcely any opportunity to inform himself. How much evil, which arises from what may actually be the merely supposed scarcity of suitable work at home might be avoided if bureaus were established where emigrants might be correctly informed as to the circumstances and laws affecting health in foreign countries and as to their own physical fitness for emigration to foreign countries, and if at the same time they could inform themselves thoroughly as to relative opportunities for work at home and abroad. Those who know the misery of emigration as I do will not doubt that it is the duty of all concerned to assist in this direction and to make such arrangements.

* Compare the suggestions above referred to, with those of Krejsi regarding apprentices generally.

We now take a step forward. We know by experience that the means which we have hitherto been discussing suitable to obviate unemployment are insufficient to completely prevent innocent, involuntary unemployment and that the number of the unemployed is very large. Unemployment would still remain to be reckoned with, and means must be taken to provide for its occurrence. Insurance against unemployment is the most effective institution. Let us consider the significance of this suggestion from a hygienic standpoint without criticizing the several schemes of insurance which have been attempted or proposed. From the standpoint of trade hygienics the chief place must decidedly be given to insurance against unemployment whether it be fraternal insurance in the meaning of the system in vogue at Ghent or compulsory or involuntary insurance, such as compulsory savings, etc., and for the following reasons: A very important consideration in the matter of protection of the workmen and one frequently very effective in dangerous occupations and especially in such as involve danger of poisoning is the promptest possible separation of the endangered workmen from the dangerous work, the change of work, the change from dangerous to uninjurious occupation, that is to say, a temporary separation from the dangerous work..*

As will be anticipated, it will rarely be possible to carry out this suggestion within the limits of any one business that is without requiring the workman to seek a new situation. It may be to some extent possible in the case of industries carried on on a large scale where several processes are involved.

It must be remembered that in this case sickness insurance is no complete protection as it must be emphasized that a workman must quit the occupation before he takes sick, that is before he is sick within the meaning of the laws relating to sickness insurance, when he shows the tendency to sickness or the premonitory symptoms (first indications). Hygiene must prevent the actual taking sick; this in many cases is possible only when the dangerous occupation is dropped at once and when, after a proper time for recuperation a new employment is sought. For such cases I emphatically recommend insurance against innocent unemployment, due to a consideration of health, and, therefore, involuntary. We are now dealing especially with cases of chronic poisoning, due to the nature of certain trades, where poison is stored in the system, and which in the case of lead poisonning can be recognized from symptoms in the early stages. By quitting the employment time and opportunity may be given the system to throw off the poison. There are, moreover, other sicknesses such as tuberculosis in its early stages, but not sicknesses as defined by the laws relating to sickness insurance, which demand the prompt relinquishment of an occupation, which promotes tuberculosis such as a trade process creating quantities of dust. This is the special reason why I as an expert in trade hygienics feel it my duty to support insurance against unemployment or some substitute (compulsory savings, etc.), quite apart from the general social hygienic considerations already touched upon.

Not to become diffuse and so obliterate the impression I have sought to make as to this, which seems to me to be the most important point of view of our subject, I shall not close without pointing out again the general significance of providing for the welfare of laborers with the object of contending with unemployment. Such provisions for the welfare of laborers in the narrower sense—as I style them—those arrangements for the well being of labor which go beyond the behests of the laws protecting labor are intended to elevate the general condition and well being of the laborer to confirm his domestic and social existence in brief, to create a contented, healthy, independent labor class which will not suffer from unemployment. I know that by such an expression I may appear to come into conflict with some of the designs of organized labor, but that would be a misunderstanding. We are not dealing with a conflict of social classes nor with a political problem; these considerations should be laid aside when we desire to accomplish social hygienic aims. In this case emulation should take the place of discord and assuredly the labor organizations are not prohibited; it will, indeed, be their duty, to emulate the employers in providing for the welfare of laborers.

*In considering this point, complete tabulation of the dangerous occupations, especially of those in which there is danger of poisoning, would from one standpoint be very desirable. (Kraepel)

THE FOURTH INTERNATIONAL CONGRESS OF SCHOOL HYGIENE

By HELEN MACMURCHY, M.D., C.M

The Fourth International Congress of School Hygiene, which will take place at Buffalo in 1913, will be an event of great importance to Canada as well as to the United States. Its significance, of course, is world-wide, but there can be no doubt that its influence will be chiefly felt in the United States and Canada.

It was in the year 1904 that the First International Congress of School Hygiene was held at Nuremberg, in Germany, and the man who summoned it, with the aid of all interested in the movement, was Professor Griesbach. Its success was marked, indeed, it seemed as if all who are interested in School Hygiene had but been awaiting the call to meet. It was there arranged that the Congress should assemble once in three years, and the next President elected was Sir Lauder Brunton, the meeting place being London, and the time 1907.

With characteristic goodwill, tact, and energy, the new President devoted himself to secure the utmost benefit to the children of all the nations of the world from the London Congress. His great personal prestige and influence, both in France and Germany, were of immense value, and he undertook a journey through Canada and the United States largely for the purpose of arousing interest in the Congress and securing general co-operation. The researches and discoveries which have made his name famous in therapeutics and in clinical medicine will not be longer remembered, and, perhaps, will not do more good than the influence he has already exerted in promoting national vigor, in uniting medical with educational authorities in efforts to secure the best conditions for school children, and to recognize their needs and in stimulating legislation for these ends.

Persona grata wherever he goes, the London Congress had in its President a great leader, a man for whom everybody would do anything, and it is an open secret that when disaster threatened to overwhelm the Congress, but three weeks before the date set for its assembling, that disaster was averted by means of a personal interview between His late Majesty King Edward the Seventh and Sir Lauder Brunton, in consequence of which the Royal assistance was graciously vouchsafed to the Congress. This was the real reason of that dramatic moment at the Paris Congress of August, 1910, when Sir Lauder Brunton, in the course of his remarks, referred to "le roi Edouard, le bien aimé." These words were received at first in sympathetic and almost breathless silence, and then when the leaders of the Congress remembered what the dead King had done for the interests of School Hygiene, there followed a demonstration of spontaneous interest and applause which no one who knew the circumstances was at any loss to interpret.

This was at the "Ouverture Solonelle" of the Paris Congress, a meeting which was exceedingly interesting and helpful, and advanced such questions as open air schools, practical methods of medical inspection of schools, the Hygiene of Residential Schools and other subjects to an encouraging extent.

It is hoped that at the Buffalo Congress, plans for which are now being carefully considered and matured, there may be a good representation of Canadian teachers, inspectors, municipal authorities, and Government representatives and officials, both from the Dominion and the Provincial Governments, as well as of the general public, upon whom the success of any such movement must chiefly rest. Buffalo is a large, progressive and growingly beautiful city, and it is easily accessible. Indeed, it was given as one of the reasons why the Congress should meet at Buffalo, that Buffalo was "so near Canada."

The officers and members of the Canadian Branch of the International Congress of School Hygiene will doubtless interest themselves in making the Congress widely-known and popular. The President, Sir James Grant, of Ottawa, and the Secretary, Inspector W. J. Chapman, of Toronto, have already done much to forward the interests of School Hygiene in Canada,

and the meeting of the International Congress in Buffalo in 1913 will be a further means of arousing public interest.

It must be remembered that British Columbia is the only Province where there is effective legislation for medical inspection of schools. In Ontario and Manitoba the Acts are permissive only. Yet in Great Britain such inspection became compulsory in 1908, and before that date it was compulsory in Germany and other Continental countries. And in Australia, New Zealand and Tasmania they are also in advance. So we are not moving too rapidly in Canada.

MUNICIPAL SERVICE IN ENGLAND

By PERCY ALDEN, M.P.

Perhaps the most significant of all developments during the last fifty years is the growth of the municipality and the extension of the sphere of local government. It is true that in England those who are entrusted with the work of administration in connection with our Local Authorities, are more restricted than is the case in Germany, but even a cursory examination of the powers obtained by Act of Parliament, reveals the wide and far-reaching nature of their scope.

Let us look at some of the positions which any Local Authority must fill with good men and women if the work of government and administration is to progress. We all know that a Town Clerk has an extremely difficulty and responsible post. He is naturally, therefore, perhaps the best paid officer in any municipality. In the case of a big town, remembering the responsible nature of his work, the large salary is none too large, for he must possess not only good legal training, but also a knowledge of Acts of Parliament which is encyclopædic. The main Acts under the terms of which he advises the Local Authority are the Local Government Acts of 1888 and 1894, the Municipal Corporations Act of 1882, and the very important Public Health Act of 1875, which consists of over 2,000 pages of notes and references to over 600 other Acts of Parliament. The Municipal Corporation Act again implies the understanding of innumerable other Acts of Parliament. The big positions are nearly always filled from the smaller towns after many years of experience.

Next in importance to the work of the Town Clerk is that of the Borough Engineer or Surveyor, who must of course be an engineer or an architect, and is frequently both. Indeed, there are illustrations to be found of men who are engineers, architects and barristers, men, of course, at the very head of their profession. A Borough Engineer may begin in a small town at a salary of £300 or £400 a year, and gradually work his way up until in the big cities he will be getting £1,000 or £2,000. The Borough Engineer would be responsible for all the work in connection with sewerage, the highways, the buildings and often such public services as the tramways. The post of Borough Engineer is more likely to be obtained if a man is a member of and possesses the diploma of the Institute of Civil Engineers and of Mechanical Engineers. The Incorporated Association of Municipal and County Engineers holds an examination, and candidates over 21, by the payment of four guineas, can enter for this examination, and receive a diploma if successful. They are examined first on engineering proper, tramway and bridge construction and water supply, together with sewage disposal, and, secondly, on hydraulics, road construction and maintenance. The next section is building construction and building by-laws, together with public baths and hospitals. Then comes sanitary science as applied to towns and buildings, dealing especially with heating, ventilation, drainage, scavenging and disinfection; and, lastly, municipal and local government law. An assistant engineer is paid from £150 to £400 per annum.

The work of a medical officer is too well known to need any detailed description. In addition to being a fully qualified doctor, a medical officer is more likely to obtain a

first rate position if he is a barrister. The medical officer is responsible for the public health of the town and must be present at the meetings of the Public Health or Sanitary Committee. Under his control are the Inspectors of Nuisances, both men and women, and also the women health visitors, who are often qualified as sanitary inspectors. In addition to the sanitary administration of a town are certain duties transferred to the Health Authority by the Factory and Workshop Act of 1891, such as the supervision of premises where women are employed. A medical officer's salary may be anything from £150 a year, which would be a part time office, to £1,500 a year in the biggest towns. These latter positions are only filled from the ranks of those who have had previous experience, and they are usually men with very high qualifications.

Before going on to deal with some of the other officials who occupy positions of considerable importance in the municipal service it would be as well to refer briefly to the subordinate officials in these three departments. The deputy or assistant Town Clerk is frequently a man without legal training, whose salary would commence at £150 and would rise to £350 or £400. In some large towns the deputy Town Clerk holds an extremely high place, and is a fully qualified man—e.g., in Manchester, he is paid £1,000 a year. A big municipality expects that any applicant for this post should be experienced in Local Government Board practice and have an intimate knowledge of the Town Clerk's Department. He must also be able to act as advocate in conducting important cases before magistrates.

Municipal Clerkships are usually filled by those who occupy junior positions in a municipal office, boys who have been well educated and have a good knowledge of figures. These juniors are promoted gradually to the positions of cashiers, collectors, district clerks, accountant and ledger clerks, etc., with salaries from £100 to £180 a year. The Chief Clerk or a Departmental Accountant would get a salary ranging from £250 to £500 a year. In the Town Clerk's Department a fairly high standard of education is required, and the salary is somewhat larger than the salaries prevailing in other departments. It is now necessary in most municipal offices to insist upon typewriting and shorthand, and if this be combined with ability to deal with large figures, accurately, there is always a good chance of promotion. A Borough Surveyor has under his control not only an Assistant Engineer, together with a staff of clerks, but he is also responsible for the Clerks of Works engaged by the Municipality, and to a large extent for the officials in charge of any Works Department. The manager of the Works Department in a big city is a first-class official, and the probability is that this position will become increasingly important in the future. The salary may range from £600 to £1,000 a year.

Under the Medical Officer's Department are the Inspectors of Nuisances, who must obtain a certificate which is granted by the Royal Sanitary Institute, if they are ever to qualify for the best posts. The Local Government Board regards the certificate of the Institute as evidence that the person possessing it is fully qualified to act in any Urban or Rural District Council outside London. It is also recognized by the Local Government Board both in Edinburgh and Dublin. The examination deals with the methods of inspection of various dwellings and trade establishments and nuisances connected therewith, the character of good drinking water and how it may be polluted, the pollution of rivers, the characteristics of good and bad food, regulations with regard to infectious diseases, methods of disinfection, builders' and plumbers' work, drain testing and scavenging, etc. Those applying for these posts have to submit satisfactory testimonials from a man holding an official position, and they also have to furnish satisfactory evidence of a practical knowledge of sanitation. The fee for examination is three guineas, and the salaries to be obtained in the provinces range from £100 to £500 a year, although the assistants rarely rise above £150 to £250. The Inspector of Nuisances in London must have, as a rule, the qualification of Inspector of meat and other foods, even though he may not be required to take up this department. Often special inspectors of food and drugs are appointed, the salaries ranging from £160 to £220 a year, or in the case of the chief inspector, £300 a year. Many municipalities have also a Shop Hours Inspector, who must be well versed not only in that Act, but also in the general work of sanitation and ventilation.

The salaries range from £150 a year to £250 for men; for women from £80 to £150 a year. Lady sanitary inspectors are increasing in numbers. They are under the immediate supervision of the medical officer of health, and their special work is in connection with the reduction of the high rate of infantile mortality, the inspection of laundries and workshops, the inspection of midwives, house to house inspection, the supervision of houses let in lodgings and certain duties connected with notifiable and non-notifiable infectious disease.

Just a word is necessary about "health visiting" which is extremely difficult and trying in respect of its duties. The Health Visitor has no legal status and no right of entry unless she be at the same time a sanitary inspector. Many Health Visitors have been nurses who feel drawn to this special kind of work; other things being equal, sanitary authorities show a tendency to appoint candidates with nursing qualifications. Since infant mortality plays so large a part in the work of a health visitor, it is a good thing for a candidate to have training in a children's hospital. If inspection under the Midwives Act is a part of the duties of a health visitor it is clear that she must be a certified midwife. The salaries range from a £100 to £120, and are quite inadequate considering the valuable nature of the work that is performed. A health visitor must have considerable tact, especially in dealing with mothers in connection with the Notification of Births Act, and the reduction of infant mortality. Apart from the certificate of the Royal Sanitary Institute the diploma of the National Health Society is valuable.

Coming to some of the more important positions outside the three main services, we have such officials as the Chief Librarian and his assistants, the electrical engineer, the school doctor under the Educational Committee, the superintendent of the public baths, the Manager of the Tramways Department,and many other posts, the number of which tends to increase almost every year. Anyone who wishes to be a librarian must either enter as a junior at £25 to £30 a year and work his way up, or he must be qualified by virture of some experience in other non-municipal libraries, together with educational certificates, and possibly a university degree. Assistant librarians are paid anything from £80 a year without rooms to £300 a year with a house, while a chief librarian, of course, may receive double this amount. The service is, however, not well paid. The Library Association, Whitcombe Street, Pall Mall, gives lectures to candidates for library work and awards certificates. The subjects of study are history, bibliography, cataloguing, classification of books, and practical library administration. Women are often employed in subordinate positions in libraries, with salaries ranging from £30 to £80 a year.

The electrical engineer is, of course, only to be found in boroughs of a fairly large size. The position is an important one, and until recently, owing to the dearth of able candidates was extremely well paid. It is needless to say that all applicants for these positions must be fully qualified by examination, and must possess certificates. To obtain the highest position it is necessary, as a rule, to accept a post in a small town and acquire there the practical knowledge which is almost indispensable in dealing with very large work. Many men get their appointments from the big electrical engineering firms. The salary ranges from £250 to £800 a year.

The school doctor is usually under the control of the Medical Officer of Health, although in some cases he has been appointed definitely by the Education Committee and is independent of the Public Health Department. In most towns the school doctor does not at present give his whole time to the work of medical inspection, and, therefore, his salary is proportionately small; but where whole time is given he will commence with about £350 to £400 a year. As medical treatment and the school clinic become more common the work of the school doctor will tend to increase in proportion and whole time appointments will be common.

The superintendent of public baths and wash-houses must be a good organizer and competent to take charge of building and machinery, with a sound practical knowledge of hydraulic and heating apparatus. The salary varies according to the town, but, is usually from £200 to £300 a year. Assistants receive about £120 a year.

Generally speaking, it may be said that the opportunities for municipal service are increasing rapidly year by year, and that as time goes on the number of candidates for these positions will tend to increase, not merely by reason of the permanent charac-

ter of the posts that are offered, but also by virtue of the honorable nature of the work. Some of the most important positions in Government departments are now occupied by men who were once officials of some borough council. To have been at the head of a department in connection with some big municipality is a guarantee that the man who held the position is a man of knowledge and experience, while even the subordinate posts, as specialization increases, will tend to be occupied only by those who possess considerable mental calibre and efficiency.

THE SCHOOL CLINIC

By L. HADEN GUEST, M.D.

In my last article (October Public Health Journal), I sketched the organization of the school clinic on its medical side, and indicated how it would deal with medically and surgically remediable ailments and defects. But among the poverty group children the worst disease, upon which the others do indeed largely depend, is poverty itself. Lack of boots, lack of clothing, and lack of food are not matters with which the doctor can professionally concern himself. But the school clinic is to work in the closest touch with the Care Committee, and when the clinic doctor has done all that is possible to put the ailing child straight from his point of view, the Care Committee agency must be called in to remedy poverty defects which otherwise would render (and do now render under present circumstances) all the medical labor in vain. The underfed child must be fed, the underclothed child clothed. The doctor at the clinic will certify what social factors are likely to cause or allow a relapse to the illness or defect, and it must be the business of the Care Committee to take precautions accordingly.

This will mean in practice that the Care Committee must have a fund for supplying the needs of school clinic cases. The Committee must go even further still. In many cases what is required by poverty group children is carefully adjusted feeding, adjusted, that is, to their damaged and deteriorated digestive systems. This remedial feeding will inevitably be an important part of the school clinic's prescriptions, and will have to be something very different from the present hap-hazard meals now provided under the Provision of Meals Act. These meals will be framed on the lines of a medical prescription, and might well (in some cases, at least), be distributed on the plan used by the excellent invalid kitchen in Southwark, which provides meals of different kinds to suit invalid digestions.

The prescription of school meals by the clinic doctor will be an important adjunct to treatment. It will be essential, therefore, to see that the meal serves its purpose of feeding the child adequately and not that of merely staving off starvation. If the school meal now provided for necessitous cases was improved so as to become a really physiologically good meal it would be unnecessary to have invalid cookery. If the meals are not so improved it is difficult to see how otherwise the proper feeding of ailing and debilitated poor children is to be obtained.

When one turns from feeding to consider the question of boots and clothes, it is clear that very much requires to be done. A school clinic will have only one answer to the conundrum as to whether it is better to treat recurrent attacks of bronchitis and throat trouble or provide a stout pair of boots and warm clothing The drug bill and the bill of clinic salaries and general expenses will be balanced against a bill for clothes and boots, and found to be much heavier. The bill is heavier now, but different pockets pay the different bills and the hospitals that appeal for subscriptions do not consider it part of their duty to prevent the need for some of their subscriptions by subsidizing boot and clothing clubs for schools.

It is the same with another important aspect of Care Committee work, that of providing for country holidays. The knowledge gained at the school clinic will

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is of immense help in determining what children need this kind of holiday and what that. At the present time the question of country holidays and of convalescence after illness, or sanatorium treatment are in a rather unorganized condition. Multitudes of children who would benefit by country holidays do not get them, many children who need seaside convalescence or sanatorium treatment do not get it, while, at the same time, unsuitable (financially speaking) children are allowed to take advantage of charities which are needed by others less well able to pay. The conditions at present are unavoidable, but how a school clinic would simplify them and make it easier to apply the charities to the best result! Given, then, that the Care Committee is working in close touch with the clinic, it should be possible to arrange for the optimum use of the agencies at their disposal and probably for the holidaying of all those children whose condition urgently require it, and especially those threatened with tuberculosis.

Very much valuable work is done by voluntary and paid health visitors who endeavor by home visits and by plain talks to impress on the homes of poor people, the common-sense lessons of modern hygiene. The school clinic will do much to fortify and reinforce this health missionary work. For the clinic will not only act as a centre, a rallying point and a reference on all questions connected with the health of the school child, but it will train the children and the parents themselves as health missionaries on their own account. As I have before pointed out, the discussion of a practical point of hygiene, say that of open windows or of personal cleanliness, becomes not only concrete, but vital, the ailment or delicacy of a beloved child as its object lesson. The lesson (it is a way with lessons) may have to be repeated, but ultimately it will be effective. A school clinic properly conducted should spread principles of hygiene very rapidly throughout its district.

I have above endeavored to point out how the school clinic will enable all cases of ailment or defect in school children to be adequately treated. How it will link the school organization with the present school doctors and school nurses and with the special and with the general hospitals. How, again, all the activities which have to do with feeding, clothing, holidaying, may be naturally grouped and co-ordinated with the clinic's medical work. And how, further, the activity of the clinic and its co-ordinated helpers will stretch outside the school, and penetrate by means of its missionaries into the home itself, bringing the sweetness and light of hygiene to the parents of school children (particularly of the poverty group), clothed in the garb of their own thoughts and ideas, and exemplified by the occurrences of the daily lives.

Nothing here suggested is Utopian, nothing here suggested is more than the grouping together of isolated and uncoordinated practical activities. The school clinic, by medically studying the child provides the natural centre and rallying point for all these activities. All these agencies which are now working in a scattered and incoordinated way for the helping of school children, will be centralized by the clinic, organized, and made a hundred per cent. more effective than they can now be. And we may hope for great and almost unrealizable changes when the school clinic pours out health and help and kindliness in every congested and poor district, for then the growth of child life, which now sinks down into the abyss, will spring up and grow healthily with the light and air of good human existence.

If you are severely practical, reader, you are conjured not to read this; it will not be "practical" until to-morrow, when some of the preliminary work of clearing out the awful morass of slum child life shall have been performed. To-day it is only a dream. A dream of the time when the child at school shall grow as sweetly and as happily as a flower in a garden, when it shall stretch up its mind for knowledge as a flower for sunlight, and when all the strange and impish deformities and etiolations, medical inspectors have to catalogue are relegated to infrequent hospitals and sanatoria with but very few beds in their wards.

The School Clinic will aim to get the level of all children up to the low "average" or "normal" of the relatively healthy in present Council schools, and then we can begin our real work of devising means whereby that low, that all too low average, may be transcended, the lethargic body grow supple, nimble and good to look upon, the dulled senses quick, true and responsive and the narrow mind actively growing and

expanding. All these things are within the sphere of the school doctor, all these things are within the scope of present-day medical knowledge. The knowledge is here in reality, it is only the accomplishment in fact that is in Utopia—to-morrow.

In the good time when the poverty-group child has grown into a sound average and the average developed a step further I look forward to a new kind of standard being introduced in schools. Standards of imagination. In the present day children are only sent to the doctor when they are obviously deaf, or blind, or halt or maimed. In the future the tests will be more subtle, and I confidently anticipate the time when "Peter Pan" or "The Blue Bird," or some such fairy tale will be a compulsory subject of the ordinary Council School curriculum. At that day any child failing to reach, at any rate, the "Peter Pan" standard of imagintion will promptly be sent to the school clinic. It is after all a rather serious reflection that there are many thousand "average" children to-day who do not reach this level.

The first steps towards the raising of the standard must be taken by raising the lowest, and by pouring so much health, help, and kindliness into the poverty-group children that their all too low grade finally disappears.

SANITARY MILK SUPPLIES FOR CITIES

By ROBERT A. BLACK, M.D.

To the layman the medical profession may seem idealistic demanding things that are not practical, yet we are on the firing line and certainly see the damage resulting, and can usually figure up the ultimate cost of carelessness.

In the demands we make on the dairymen we feel that we are not asking more than we have already done.

That there will be an increase in the cost of milk we know. We also know that there can be an increase in the cost of almost any other commodity without serious remonstrance, yet there are loud, wild outcries of "trust" the moment a progressive dairyman declares that his production of pure, clean milk means an increase in cost of 1 or 2 cents per quart.

If, however, the consumer were told plainly that cheaper milk means disease germs and dirt, I do not think there would be any complaint about the increased cost, which should be cheerfully borne by the consumer.

From a medical standpoint we ask: That there be clean milk with an absence of large numbers of germs and entire freedom from pathological germs or the germs which produce disease; a constant nutritive value of known chemical composition with a uniform relation between the fats, sugars, and albumens; an unvarying resistance to early fermentative changes, so that it may be kept without extraordinary care.

In our first requirement, I say absence of large numbers of bacteria, because aseptic milk is practically impossible and would add a needless expense to the dairyman. Also it would appear from experiments that certain germs are comparatively harmless in small numbers and may be even beneficial.

That milk should be entirely free from disease producing germs is shown convulsively by a summary of epidemics prepared by Busey and Kober, of which I cite only a few to show the most intense need of this requirement.

A typhoid epidemic in Clifton, England, showed 244 cases, of which 230 came from one dairy.

A scarlet fever epidemic in Boston in 1907 produced 227 cases. Of these 195 came from the same dairy and occurred in four days' time.

A diphtheria epidemic occurred in Ashtabula. Of 111 cases, with 23 deaths, 100 cases came from families that used milk from one dairy.

Statistics on tubercular infections directly transmitted are harder to find, yet we can be on the safe side by taking the conclusions of several able workers who have

recently gathered proof.

Anderson in 223 samples of milk showed that 6.72 per cent. of the samples contained tubercular germs virulent to guinea pigs.

Trosh examined 7,097 samples of market milk and found tubercular germs in 594.

Schroeder says whatever chances we ourselves may take as adults, yet we have no right to neglect our duty to children. When we examine the reports of a host of investigators we find, though there may be two morphologically distinct types of the tubercular bacillus, that they are connected by transition forms, and if the two commoner types (human and bovine, but neither restricted to man nor cattle) really differ in an important way, it is that the type commoner in cattle is of much higher disease producing virulance than that common to man.

This shows why milk should be produced only from tuberculin tested cows, and the more so since Salmon, after a careful study of all facts in regard to the tuberculin reaction on cattle, says: "It is an accurate method of determining whether the animal has tuberculosis."

That by its use the diseased animal is detected and removed from the herd, thereby protecting other cattle.

That tuberculin has no ill effect on the healthy animal.

Already we see the progressive dairyman taking advantage of this test. Let us help him along by demanding it for all our milch cows.

That milk must have a constant nutritive value and definite chemical composition is already recognized by law for protecting the consumer from fraud and dangerous dilutants and preservatives and also for the use of infants. Without a definite standard it would be impossible correctly to modify milk.

Certified milk commissions have adopted a standard of 3.50 per cent. proteids—3.50 to 4.50 per cent. fats and 4 per cent. sugar. Should milk for drinking purposes show a higher per cent. fat than this it should be so labeled or enough milk of lower composition should be introduced to bring the food value down.

To obtain the ideal milk for infant feeding we should take one step farther and demand that the dairyman use cows which produce a small size fat globule in their milk

Our third requirement, an unvarying resistance to early fermentative changes, demands as little handling as possible.

Rosenau experimentally shows that clumping or clustering is one of the factors that cause an apparent decrease in number of germs. Milk that is shaken or stirred vigorously shows more germs growing on culture media.

The next reason for fewer handlings is that each handling only adds another source of infection.

Milk should be subjected to a steady cool temperature, apparently best around 40 degrees Fahrenheit.

Rosenau found that freezing milk for ten minutes had no effect on the germ destroying power, that freezing for twenty-four hours before inoculating with bacillus typhosus had no influence on its restraining power as far as the bacillus was concerned, but apparently lessens this power for the bacillus forming lactic acid.

Yet freezing does produce changes in milk, for each winter we see cases of food poisoning in infants which can be attributed to thawed frozen milk, hence doctors usually warn mothers against permitting babies to have such milk.

That it should not be allowed to stay at a temperature much higher is shown by Frendenreich, who subjected a sample of milk containing 153,000 germs to the cubic inch to a temperature of 59 degrees Fahrenheit and one hour later found it to contain 539,750 germs, and at the end of twenty-five hours to contain 85,000,000 germs.

The effects on milk of higher degrees of heat sufficient to kill bacteria (which is conceded to be with few exceptions around 140 degrees to 165 degrees Fahrenheit) is still the subject of much controversy.

It is generally agreed that milk has a germicidal action, and that this action is present only in raw milk, and continues according to Meinemann for eight to ten hours.

Boiling or heating to about 80 degrees centigrade destroys this action, lesser degrees of heat vary with the micro-organism to be destroyed.

The effects of heat 140 degrees to 165 degrees Fahrenheit on the various ferments is also a subject of controversy, and the bulk of the evidence seems to be that pasteurization done in scientific laboratories and by ultra scientific men is not in the least

injurious, yet in my opinion commercial pasteurization of a dirty milk supply is to be condemned as is the dirty milk supply.

Mildly stating it, it is far from the ideal method, and I think it is positively harmful in the manner in which it is now commercially carried on.

With the amount of advertising that pasteurized milk has received, expended on demanding clean milk, we certainly would be closer to our goal, which is, Clean, Pure Milk.

Many times do I hear, when baby is taken ill with enteritis, and the milk is investigated, the mother reply, "O, it cannot be from the milk, because the label says Pasteurized." Such is the false sense of security which is now developed that the mother is often absolutely careless with her part of feeding pure milk to the babe. And it is only too late when she realizes the real import of commercially pasteurized milk. Why have we not taught her in the beginning to demand pure milk?

Having a desire to see what was the condition of this pasteurized milk when it reached the babe, I had my assistant, Dr. W. P. Curtis, collect samples. These samples were taken directly from the baby's bottle, with the exception of three taken from hospital, and taken during the last month, when the weather has been ideal to keep down germ growth; you can imagine what they might be during the warm summer months.

For a three low count we found 3,400, 7,140, 22,540.

For a three high count, 2,580,330, 426,-520, 864,640.

Such a varying of counts certainly fails to impress us with the efficiency of commercial pasteurization.

In talking to the manager of one of our larger pasteurizing plants, he gave the following description of their method:

"Our milk is first run through the separator to remove any sediment." Imagine what the sediment of milk may be. Imagine our permitting any sediment of manure, dead flies, and hair in any other articles of food. Does this straining out of sediment and pasteurizing not tend to make the dairyman careless?

Then when the milk enters the pasteurizer it has a temperature of about 60 degrees. Just the temperature that Fremdenreich showed to produce 85,000,000. Then heated to a temperature of 165 degrees for one and one-half minutes or two minutes, then run through a water cooler at 50. Rogers has recently shown that a temperature of 185 is the lowest at which this flash pasteurizing can be effective, yet I know from talking to various dairymen that they consider 165 degrees sufficient. Of course they have to, for a higher temperature would destroy their cream line and make their milk a marked, disgraced, dirty milk and place it where it really belongs.

Does that sound like a method warranting us physicians in recommending pasteurized milk, or does it not sound more like a commercial way of keeping milk sweet till it can have a chance to kill some babe?

Dr. Freeman, of New York, after a careful study of milk from a medical standpoint, concludes that while milk is in no way changed by pasteurization for forty minutes at 140 degrees, yet commercial pasteurization is to be condemned.

Dr. Evans, of Chicago, in an examination of five large pasteurizing plants during the month of May, found two plants, using the flash method of pasteurizing, averaged about 750,000 and the three using the holding method averaged about 575,000 germs.

This certainly leaves a most dangerous milk when we consider how from various experiments it has been shown that the lactic acid germ is one of the easier killed, although a few hardy strains remain.

Dr. Koller's work at Rochester certainly speaks for itself, and if I have his figures right, they certainly show a reduction in infant mortality far in excess of any figures, yet shown by commercial pasteurization of a diry milk, so that instead of contending and temporizing with improper pasteurization, or pasteurization of improperly procured milk, or improper care of pasteurized milk, let us demand and work for Pure, Clean Milk.

SMALLPOX REVIEWED

By FREDERIC J. HASKIN

Comparatively few people in these careful days of compulsory vaccination and rigid quarantine can realize what a frightful scourge to humanity smallpox has been. In its total of devastating effect on human life it has probably equalled any of the great plagues and distempers of history, owing to the melancholy fact that from probably the earliest times it always has raged in some quarter of the globe with greater or less mortality. It is always epidemic somewhere.

Formerly smallpox was considered inevitable and incurable, while the rude medical science of antiquity and of the middle ages down to the last quarter of the eighteenth century was powerless to prevent its ravages. Even to-day there is no cure for the filthy disease. The modern weapon consists wholly in prevention.

Smallpox is said to have prevailed in eastern countries from the most remote antiquity, but its early history is shrouded in obscurity. Aaron, an Alexandrian priest, who lived in the early part of the seventh century, is said to have first decribed the disease. Some have traced an allusion to it in certain passages of the Old Testament. The Greek writers included smallpox and measles under the same head or class of diseases.

The first appearance of smallpox in Europe is supposed by some to have been the epidemic described by Gregory of Tours as having prevailed in France in the reign of Childebert about 520. It is more generally considered, however, that the disease was first brought to Europe by the Saracens about 710. Spreading from Spain, it soon overran Europe, but spared for a time certain isolated countries, such as Denmark, where it did not appear until 1527. It was carried to the West Indies in 1517 by the adventurers who hastened to profit by Columbus' discovery of the new world. It reached Mexico in 1520 and Brazil in 1563. Farther north it first appeared in Maryland, having been brought there by an English ship in the early part of the seventeenth century. Thence it rapidly spread through Virginia, the Carolinas, New England and other portions of the American colonies. Strangely enough, the disease is more than usually fatal to aboriginal peoples, such as the native Indians of the West Indies, the inhabitants of Polynesia, our own American red men and the Eskimos of the Arctic circle.

Neither palace nor hovel formerly was immune from the ravages of smallpox. Royalty itself perished in the persons of Queen Mary of England in 1694, the Emperor of Germany in 1711, the Dauphin and Dauphiness of France in 1712, the Emperor of Russia in 1730, the Queen of Sweden in 1741, and Louis XV .of France in 1774. In the middle of the eighteenth century 2,000,000 perished in Russia. In London in 1723 one out of every 14 deaths was due to smallpox, while in France in 1754 the rate was as high as 1 in 10.

Up to the beginning of the nineteenth century, when its ravages were decidedly checked by vaccination, smallpox continued its course as a deadly pestilence almost always and everywhere present, sparing no age, sex, condition nor nationality. No one was safe from it except by virtue of having already passed through its perils. Its history, like that of other acute contagious diseases, is that, while always prevailing to a certain extent, especially in large cities, it raged as an epidemic every few years. This periodical recurrence is doubtless due chiefly to the fact that each epidemic exhausts nearly all the subjects then susceptible to the disease, so that a certain time must elapse for a sufficient number of others to be born into the world to afford the material for a fresh outbreak.

This theory explains the recurrence of such scourges as the plague and the sweating sickness through so many centuries. As has been noted, up to the latter part of the eighteenth century there was no known method of rendering people immune from smallpox. It looked as if the human race was doomed to suffer indefinitely from its awful ravages. But about the year 1773 Dr. Edward Jenner, an English physician and a pupil of John Hunter, began the search for a prophylactic. Some time previously he had investigated the cowpox, being led thereto by accidentally hearing

of a curious rustic legend or axiom to the effect that milkmaids or dairymaids who had contracted the mild and almost harmless cowpox were exempt from smallpox.

On May 14, 1796, Dr. Jenner vaccinated a boy eight years old with lymph from the hand of a dairymaid who had been ill with cowpox, and on July 1 following inoculated the same lad with smallpox virus. The experiment was successful and an account was published in June, 1798. The practice of vaccination gradually gained ground, though not without strenuous opposition, which has continued up to the present day. Wherever it is practiced the ravages of the smallpox scourge have been controlled and almost stopped, and most civilized countries now enforce compulsory vaccination.

According to the best medical authority we know nothing of the original cause of smallpox, but it never occurs save as the consequence of infection conveyed from one person to another. The contagion exceeds in virulence that of any other disease. The infectious principle is known to reside in the fluid contents of the pocks and in the crusts resulting from their desiccation, and it is probable that it is also contained in many of the fluids of the body. Moreover, it pervades the emanations from the person, so that actual contact with the sick is not necessary to the conveyance of the disease.

To what distance the volatile contagium may extend is uncertain, but it is known to have crossed a river 1,500 feet wide. In its fixed condition, attached to articles of clothing, bedding, merchandise, mail matter, paper money, etc., this infectious principle is very energetic and persistent. The disease is communicable at all periods of its course, even in the period of incubation before any symptoms have occurred, and as late as the close of the stage of decrustation, but probably it is most intensely contagious during the vesticular stage of the eruption. Even a dead body is capable of conveying infection. It may also be carried from one person to another without the person who carries it himself suffering from an attack. But, undoubtedly, those surroundings where poverty, squalor and dirt abound are favorable to the spread of smallpox. Fresh air, sunlight and cleanliness are its foes.

The treatment of smallpox, according to proper authorities, consists in conserving the resources of the patient, and in early detecting and combating complications, such as chill or cold. No sort of medication or regimen exerts any curative effect in the proper sense of the word. Many so-called specifics have been vaunted, but there is no satisfactory proof that they have ever accomplished anything. Vaccination, although of such signal efficacy in preventing smallpox, is utterly powerless to cure it. No treatment will prevent pitting, although many persons who have undergone an attack are not permanently disfigured in this way.

Avoidance of exposure to the contagion will also prevent the disease, but this is difficult and often impossible to manage. All clothing, bedding, etc., which may have become infected are destroyed by fire, or, if too valuable to be sacrificed, are disinfected by heat as high as 212 degrees Fahrenheit, or by the fumes of burning brimstone. Everyone exposed to the disease usually is required to be at once revaccinated. Patients are capable of conveying the infection until all the crusts have fallen off.

The last great epidemic of smallpox, which literally overran all Europe and North America, began in 1870 and abated in 1873. Although there are, and always will be, sporadic cases, and even lengthy visitations of the scourge here and there throughout the world, modern methods of prevention and segregation in civilized countries at least may be relied upon to stop all threatened epidemics.

While there are many who still doubt the efficacy of vaccination, its value is probably as well proved as anything can be, short of a multiplication table. The experience of the Philadelphia Municipal Hospital, but one instance of thousands, might be cited. Although 9,000 cases were treated there during a term of years, not a single physician nurse nor attendant who had been properly vaccinated contracted the disease. Of 3,500 cases treated during one outbreak, not a single case was of a person who had been vaccinated within the recognized term of years.

World Views

An Anomalous University.

The medical faculty of the University of Toronto, whose graduates have to be re-examined by another Ontario college, the College of Physicians and Surgeons, before being trusted to practice medicine in that Province, wants to be freed from such control of said other college. Dr. C. K. Clark, Dean of the Faculty, writing in the report of the Board of Governors of the University to the Government, describes the present relations as anomalous and humilitating. Dr. Clark says:

"Possibly the greatest hindrance to the highest development in the teaching of medicine in the University has been caused by the fact that we are not able to adopt the most advanced and most desirable methods, owing to the demands of the Medical Council of Ontario. It is an anomaly that medical educational standards and methods in a Provincial university must be determined very largely by another Provincial body out of touch to a great extent, with university ideals and requirements of modern medicine. That the Medical Council is a necessity no one denies; that its chief function is to direct medical education, set standards, and conduct examinations, rather than protect the general public from quacks and dishonorable and criminal practitioners, is a very different matter. To many the latter function seems to be the all-important one. At all events, the time has come when we must consider the advisability of endeavoring to establish the University Medical Faculty in such a position that it may develop, unhampered by narrow and humiliating restrictions."

In comparison with ruling methods elsewhere, the position in which the Ontario Government has placed its State University, is, to say the least of it, unique.

The Rat Menace.

For the first time in 250 years the bacillus of the bubonic plague is acknowledged to exist in England. On December 12th, 1906, a woman living in a cottage in the village of Shotley, situated on the south bank of the Orwell, some miles southeast of Ipswich, and isolated from the adjoining country by the estuaries of the Orwell and the Stour, died of what was then thought to be pneumonia. Two of her daughters later took the disease, one recovered and one died. Two weeks later a woman in the next cottage who had nursed her neighbors, died of pneumonia; a few days later after this her husband died of the same disease, and in January her mother. Two of her children had pneumonia and one died about the same time.

A short time afterward, at Trimley, on the north side of the Orwell, two more persons died within a month of a disease, now believed to be the plague. A third outbreak occurred in September, 1910, at Freston, a village a few miles south of Ipswich, and more than six miles south of Shotley. On September 11, a little girl of nine was taken ill and a cat which she had fondled died the same day. The mother of the child died on the 23rd, her father on the 29th and a woman who had helped the father to nurse his wife died on the 29th. Bacterial cultures made from the blood of two of these four persons revealed the plague bacillus, and that they died of pneumonic plague there is now no doubt.

The remarkable fact, discovered when the Freston cases were shown to be pneumonic plague, was that for some years past, in the peninsula south of the Orwell, there was an extraordinary mortality among rats, which have been dying in large numbers since 1908, and probably before that. One man testified that he had seen as many as 300 dead rats in the field in a single morning. Examination of these dead rats disclosed that they had died of the plague. It was found that as many as five per cent. of the live rats were suffering from the plague. The significance of

this figure can be understood when it is said that in Bombay during one of the most virulent epidemics of plague, the proportion of live rats found in the proportion to the plague-stricken rarely reached six per cent.

The theory is that the infected rats which caused this trouble were thrown on the English coast from a wrecked vessel from India. Owing to the peculiar conditions of the country where they landed, the disease has not yet spread very far. Inasmuch as the pneumonic plague can be caught from the breath of a patient, the possibility of damage in the thickly peopled districts of great cities like London and New York, where the rats in the dock area swarm by the million, is as hideous as can be imagined. Apart from the danger to human life, the consequence to trade of any city from an outbreak of the plague is beyond calculation.

The Government knows that each rat costs at least a dollar a year for the food it steals and the property it destroys; when to this is added the possible danger from death and the loss to business, the necessity for considering plans to guard against rats, which not only carry plague but other diseases which can be spread by animals, is apparent. San Francisco has had its little scare and found it economy in making buildings rat-proof.

"Specialism."

A contemporary, in discussing the habit which many physicians have acquired of devoting their attention to some special branch of the medical profession, remarks that one of the most striking features in regard to the development of the healing art at the present time is the increasing tendency towards "specialism," and there are indications that the present year may witness the initiation of a professional movement which may place the various "specialties" on a much more independent basis than they have been before. It seems quite clear that the public will be pleased with this, for, according to the opinions of many general medical practitioners, patients in this country have never before been so anxious to consult specialists, a very good thing for the latter, no doubt, but rather hard on the family physicians, who have to bear the chief responsibilities of illness at ordinary times.

It can scarcely be said, however, that the remarkable growth of "specialism" in recent years has only served for the relief by "specialists" of minor disorders of the throat, nose, ear, eye, and so forth, which used to be very well treated by the family physician, but rather that the rapid development of technique and new methods of treatment during the past decade has made it practically impossible for the family physician to deal with more than a limited number of disorders of special organs in an up-to-date way. Subsequently the number of men who have particularly studied the affections and treatment of particular parts of the body, and so become "specialists," has steadily increased. And one of the most remarkable of the later developments of this movement has been the establishment of what are practically specialties within specialties; thus an ear specialist, for example, may devise a means of successfully treating one particular disorder of the ear, and soon confines his practice to that only; sometimes he soon has no time to do anything else. In addition, it must be remembered, a number of quite new principles of treatment have come into use within the last few years, each requiring considerable special skill and knowledge. Of these, perhaps, the best known are medical electricity, X-rays, and the radium treatment.

Thus it is obvious that an increased "specialism" has been forced on the medical profession by necessity of circumstances arising from within, whilst the movement has been aided from without by the discovery of the public that, as a specialist can be obtained for almost any disorder nowadays, the individual patient can make his own selection as to what authority he will consult directly without going first to his family adviser. As a matter of fact, medical opinion in this country in the past has been strongly against the assumption of a "specialty" by men of first-class standing, but specialism had to come, and now is in some danger of advancing to an absurd degree unless it is controlled by new professional regulations.

It is recorded that in ancient Egypt there was such a craze for specialists that each physician treated one disorder only, and was subject to penalties if he went beyond his clearly-defined sphere of activ-

ity; and at that time the condition of a patient suffering from a variety of complications must have been an unfortunate one unless the individual physicians who had him parcelled out were of a particularly agreeable disposition. Under those circumstances, anyone suffering from such an ailment as influenza, which may, of course, upset every separate system in the body, was liable to have perhaps a dozen physicians each treating his special department, and the result must have been chaotic.

One of the signs of the times in this connection is the proposed establishment of special diplomas and degrees for physicians who wish to specialize, on the lines of the "L.D.S."—the license in dental surgery which is the distinguishing qualification of our dentists—and some progress has been already made in this connection. Thus, quite recently, the University of Oxford, England, instituted a new diploma in ophthalmology, and it is probable that in the future most eye specialists will endeavor to obtain this distinction, which can only be obtained by passing an extremely rigorous and seaching examination. A well-known throat and nose specialist has lately entered a very strong plea for the establishment of a similar diploma for those who wish to take up the particular field of practice in which he has himself become distinguished, but, so far, no definite steps have been taken in this direction. And so, if this movement goes on, it may lead to the definite separation of a great number of different forms of practice from general medical and surgical work.

Some reflection of the modern tendency to "specialism," both in practice and investigation, is to be found in a new post just created at the London Hospital, England, in connection with the special study of heart disease, and called the "Lectureship in Cardiac Research." This important appointment has been filled by the election of one of the foremost medical scientists, an investigator whose recent work on disorders of the heart is well-known and whose theories have excited admiration in every centre of medical learning. The duties of this new member of the staff will be to conduct investigations in his special branch of study both in the wards of the hospital and in the laboratories connected therewith; he will also deliver series of lectures on the heart and its disturbances in the London Hospital Medical College, and it may be anticipated that such lectures will attract a large number of medical men.

In some respect, this lectureship marks a new departure in hospital procedure, for, in the first place, there appears to be no other appointment of the kind; and, secondly, the distinguished physician invited to fill it has made most of his important and original observations on heart disease in private life, unaided by the facilities offered to workers in the big modern hospitals, and without having held the usual junior and senior hospital appointments which conventionally lead to posts of such distinction. The system in vogue, by which a man who wants to become a hospital "consultant" has to attach himself to such an institution very early in life, and to follow a recognized line of progress at his hospital, depending on seniority, practically bars a man who has spent many years in general practice, or abroad, from obtaining an important post at one of the leading hospitals should he subsequently wish to set up as a consulting physician or surgeon.

Another departure in the direction of the development of special "treatments" is to be found in the recent establishment or an "inoculation department" at Westminster Hospital, London, England. This has been placed under the direction of one of the hospital physicians, who has specially studied the treatment by injection of vaccines, and there is no doubt that not only will this new department enable patients to have the benefits of the latest advances in bacteriological methods, but it will form a centre of research from which much useful information will be given to the profession at large from time to time.

British Physician v. Chemist.

The chemists of the United Kingdom of Great Britain and Ireland, have not been long in devising a counter-stroke to the action of the medical practitioners with regard to the practice of medicine and surgery by unqualified persons. The report recently issued from the Privy Council Office setting forth the results of an exhaustive inquiry among medical officers of health (reviewed in this issue),

undertaken at the request of the General Medical Council, in which the chemists of that country were severely criticized for their disposition to enter into competition with the medical practitioner. This report has been considered by the Parliamentary and General Purposes Committee of the Pharmaceutical Society of Great Britain; and at the last meeting of the General Council of the Society the following resolution was adopted:

"That having regard to the grave dangers attending the dispensing of medicine and the handling of poisons by unqualified persons, and to the fact that at the present time the precautionary measures imposed by Statute upon chemists and druggists do not apply in the surgeries and dispensaries of medical practitioners, the Privy Council be urged to authorize an investigation into the conditions under which the storage, compounding and dispensing of medicines, and their distribution, are carried on in various surgeries, dispensaries, and similar establishments in Great Britain."

A member of the Pharmaceutical Society, in close touch with the activities of that body in defence of its members' interests, writes that the questions at issue between the physicians and the chemists of the kingdom at this juncture were arousing the keenest interest among the members of the two professions.

"The complaint of the medical men and our counter-attack," he said, "constitute together the latest phase of a very old quarrel. For at least three hundred years there has been trouble of this kind between us in all parts of the world; and I do not suppose the Privy Council, while acting in the interests of the general public, will be able to find a satisfactory settlement of the dispute.

"The General Medical Council, it must be confessed, have secured in this report of the medical officers of health, a strong argument in support of their demand for a Royal Commission to inquire into the practice of medicine and surgery by unqualified men; but the Pharmaceutical Society was bound to protest against the strong attack upon chemists and druggists which the report contains. Not only is a general charge of prescribing made against us, but we are accused of overlooking infectious diseases in connection with the people who come to us for advice and treatment. It is also affirmed that the faulty treatment of infant diseases by chemists has some bearing upon the rate of infant mortality."

"How do the chemists propose to meet these charges?"

"When the Privy Council sent our society a copy of the report a sub-committee of the Parliamentary Committee was appointed to consider the matter; and, as an interim recommendation, it is proposed that the Privy Council should include the methods of medical practitioners within the scope of their inquiry."

In further explanation of the chemists' point of view, it was pointed out that physicians are not adequately trained in dispensing. "As a rule," writes the chemist already quoted, "the medical student's training in pharmacy is confined to a three months' course of quite a perfunctory character; and when he starts practising his healing profession he is allowed to handle the deadliest poisons quite free from the supervision of the inspectors who are employed to keep a watchful eye on the bottles and labels of the chemists and druggists. Our ideal finds expression in the demand that all medicines should be dispensed by a registered pharmacist or under his supervision; but, in the meantime, we are on safe ground, from the public point of view, in calling for an extension of the regulations as to the storage of poisons so that they may apply to "doctors' dispensaries" as well as "chemists' shops." We have to keep our poisons quite clear of all other drugs, and securely locked up when not required; but the physician may keep his strychnine in a bottle by the side of one containing distilled water, and he may even use his discretion as to whether he employs any distinguishing label.

"Of course, if a chemist should happen to make a fatal mistake in dispensing, the subsequent coroner's inquest gives full publicity to the affair, with serious consequences to the chemist; but we have always contended that the physician is at present in possession of too many facilities for hiding his blunders. If the Privy Council accede to our demand for an inquiry into the management of the physicians' dispensaries, a strong case will probably be made out for more equal treatment as between physicians and chem-

sts. Speaking generally on the question of the alleged poaching upon the physicians' preserves by chemists, we claim that the practice of diagnosing a case in a chemist's shop is of much rarer occurrence than the report just issued appears to make out; and we are perfectly certain, in any case, that the physicians keep a good deal more work from us that legitimately is ours than we take from them."

Ontario and the Tuberculosis Exhibit.

The Ontario Provincial Board of Health has had its Tuberculosis exhibit placed in a railway car and for the last two months has shown it in many of the towns and villages in the Province. With this there is also a fine series of lantern views which are explained to the public by the local medical men at the evening meetings. Large crowds have attended these meetings in many places, and the results of the campaign ought to be very beneficial in awakening the public to their obligations in the matter of preventing the spread of this disease.

The Secretary of the Canadian Association for the Prevention of Tuberculosis has also lectured in many of the places in conjunction with the exhibit.

The car is an altered baggage car and bears on its side a large sign indicating its use. On entering the car one notices first of all the numerous warnings to consumptives and their friends, which, interspersed with photographs and drawings of sanitariums in different parts of Europe and America, cover the walls of the car, among the latter may be mentioned the King Edward VII. Sanitarium in England, a notable one at Edinburgh, Scotland, the Stony Wold Sanitarium at Lake Kashagua, N.Y., some of those in the Adirondacks, N.Y., and the one at Lake Muskoka, Canada. On desks suitably placed are pamphlets addressed to consumptives and their friends, both in English and in foreign languages, containing advice and warning. Through the centre of the car placed on stands are models of many styles of houses suitable for living in the fresh air, one of which has a rustic lower portion with canvas walls and roof, others of a lean-to description that may be taken apart for removal. There is also shown a canvas attachment for a sleeping apartment in which the occupant while indoors, may enjoy all the advantages of sleeping out of doors, without being annoyed with a draft. On an inclined table are shown many varieties of sputum cups for the invalid, made of paper, metal, crockery and india rubber, of many designs. Model cans for the pasteurization of milk, made of tin and capable of treating six bottles at a time, were on view. They are intended for home use. Among the pictures on the wall are portraits of celebrated persons who have died of this disease. Among them are Weber, Chopin, Schiller, and Baskirshift. There are numerous photographs of children sufferers from tuberculosis. The purpose of the exhibition is to impress on those afflicted, the fact that fresh air and sunshine are enemies of consumption, while a close atmosphere and dirt are the greatest aids to its dissemination, as so many of the mottoes displayed point out such as "Sleep with your widow open and don't be afraid of cold air." "Don't live in a room without fresh air." "Don't sleep in a room without fresh air." "Don't work in a room without fresh air." The majority of people don't allow sufficient fresh air and sunshine to enter their homes. Further the necessity is pointed out of taking preventive measures at the earliest indication of trouble.

Value of Pure Air in the Store.

The "Michigan' Tradesman" remarks that one of the matters to which every merchant ought to give attention during the winter months is that of proper ventilation of the store. The effect of impure air upon the employees is far from conducive to their giving proper attention to customers, for carbon dioxide, or carbonic acid gas—a prominent constituent of impure air—is poisonous, and when unmixed with air is fatal to animal life. Even when comparatively small quantities of carbon dioxide are present in the air the effect is numbing and depressing. While the clerks are thus affected, the customers, on the other hand, soon lose the "ambition" and energy with which they entered the store, and are apt to cut short their purchases, or go elsewhere.

To put it briefly, the sale and purchase of goods, especially at retail, certainly can not be properly effected in a badly ventilated store. Hence, the fact that this problem of ventilation is a difficult one is no

excuse for "side-stepping" it. In the largest and most modern establishments one finds an elaborate ventilation system in connection with the heating apparatus—proving that such stores are sparing no effort to find a satisfactory solution of this problem.

Open windows and draughts, as a rule, are inseparable. Yet open windows there must be, unless some better form of ventilation can be devised. One great aid to ventilation is the installation of exhaust fans at one or two points in the store for the purpose of sucking out the vitiated air. There ought, however, in addition, to be some provision for the admission of outside air in some part of the floor, where a draught will not cause inconvenience. Preferably, the air should be admitted through ducts connected with a large upright shaft which will permit of the taking in of the upper air, rather than of air which is impregnated with the dust and odors of the street.

Especially is some device of this character essential at the present time, when revolving doors or double sets of swinging doors are the rule. For such portals carefully guard against the admission of fresh outside air to the interior of the store.

The problem of ventilation on upper floors, of course, is much simpler than that affecting the main floor. On the other hand, the matter of ventilating basements is even more complicated than that of the street floor. Even in the basement, however, ducts and exhaust fans can be installed at a moderate cost, and the result will certainly be of material benefit.

Frequently the effect of the impure atmosphere is intensified by the high temperature which is allowed to prevail in the store. Most American stores are too warm during the winter. The management seem to forget that visitors or customers are clad in heavy wraps and have their heads covered. There is little excuse for having the temperature either so high as to be uncomfortable to customers or so low as to cause suffering to the clerks. A uniform temperature of about 68 degrees, with a due amount of ventilation, would make the place comfortable to all.

New Jersey Sewage Treatment.

The disposal of sewage is one of the most interesting sanitary problems with which the average municipality has to contend.

In the prevention of stream pollution New Jersey is in the forefront. An account of what has been accomplished in this line in that State is interesting. The twenty-third annual report of the Board of Health of New Jersey, which has recently been issued, contains among other very interesting matter brief descriptions of all the sewage plants of any importance which were in operation or under construction in the State at the time the report was prepared. It shows that there were 63 public and semi-public purification plants in the State, with 14 additional plants then under construction, and nearing completion. The report states: "Purification works are being installed on various sewerage systems which are already in operation, and the Board has wisely refused to approve plans for new sewerage systems unless disposal plants are provided for therein. It is no vain boast that this State is far in advance of all others in this work of cleaning up its streams, the Passaic River, for which this Board is not responsible, being the exception."

The report contains a list of these plans. All but 12 of these employ septic tanks, and one of these 12 has what is called a "settling tank." Two plants, one at a factory in Burlington (The Thomas Devlin Manufacturing Company) and one at a sanitorium in Glen Gardner, have sprinkling filter installations. In the former Taylor's sprinkling nozzles are used, and in the latter splashing disks. Quite a percentage of the plants rely upon septic tanks alone for purifying the sewage sufficiently to permit its discharge into streams. Eighteen plants give the effluent a second treatment in contact beds, double contact being applied in several cases. Most of the others employ intermittent sand filtration or broad irrigation. Ten plants subject the sewage to a third treatment of sand filtration or to disinfection, in addition to septic tank treatment.

A most satisfactory decrease in typhoid death rates is shown by the records for the past thirty years, a part of the credit for which is probably due to the decreased pollution of the streams, part to increasing attention to purity of water supplies and part to general sanitation.

Deadly Atrophy.

"The average age at which a thesis for the doctor's degree is presented is twenty-eight," says the Westminster Gazette. This is supposed to be the first productive work. But the thesis "is likely to be the working over of the old ideas of an old professor. In the meantime the creative instinct has atrophied." The best educational method is that in which the beginner assists the expert. Professor Wilberforce has stated, as the result of the experience in the Cavendish Laboratory, that the more advanced students appear to work best when their teachers are in difficulties. This is, of course, inspiring to the teacher. But he does not get the same stimulus in teaching large classes. Three-fourths of the leading scientific men in America earn their living by teaching. The professor at the university will receive about one-third of the salary enjoyed by the president, and his position is tenable only by the favor of that luminary. The scientific man in the service of the State receives the salary of a clerk and is treated as a clerk. Thus "we are in danger of sliding down the lines of a vicious spiral until we reach the stage at which the professor and his scholarship are not respected because they are not respectable." Some day the difficulty may be met by the establishment of research positions in the universities, &c., well paid and free. Senator Vilas has left funds to the University of Wisconsin for the foundation of ten professorships with salaries of $2,500 a year and freedom from routine teaching, the position and the salary being for life. Such posts should attract men of exceptional ability. "Poverty, celibacy, obedience, and obscurity are exotic ideals which cannot be used to make the scientific career attractive." And if the men are not to be found in the country, why not import them? Nine leading men of science have in the past seven years returned to the countries of their birth, and but one has in that period been attracted to America—"one scientific man among seven million immigrants." Seven years ago a list of the first thousand Americans of distinction in science was prepared, and this has now been revised for studies of the conditions of heredity and environment. Of these 126 were foreign born, seven being in the first hundred. There were twenty-five Englishmen in the 1903 list, and none in that of 1910. An analysis of the new list shows clearly that the cities of America are failing to produce scientific men, "and presumably other men of intellectual performance, to an extent that is omnious." The centres of vast wealth and richly endowed universities show "a sinister record." The southern States can claim but five men in the thousand.

America ought soon to be in the van as far as medical research is concerned, if great endowments will attract the right men. There is the Rockefeller Institute for Medical Research, in New York, with an endowment of close on seven million dollars. The State of New York is enlightened enough to support a laboratory for the investigation of cancer at Buffalo. There is an institute at Philadelphia for the study of tuberculosis, founded by the benevolence of Mr. Phipps. And Mr. and Mrs. McCormick, of Chicago, have established a school of research for the investigation of infectious diseases. But the feeling seems to be growing up that, after all, the State rather than public-spirited men and women is the right source to which appeal for funds and organization should be made in the case of matters so intimately connected with the interests of the whole community. Of the forty-three State and territorial legislatures in session two years ago, no less than twenty-eight passed laws with reference to tuberculosis. And since then ten States have spent some $100,000 for the sole purpose of educating the public as to the nature and treatment of that disease. Indirectly, of course, much is done by public departments. For instance, the Bureau of Chemistry, through the Acts which have been passed relative to the purity of food and drugs, has rendered signal service to the public health. In April last the President recommended Congress to vote $50,000 for the establishment of a cancer laboratory. But the most important sign of the trend of public opinion in America is the recent Bill for the rounding-up of all these activities of Government, and the formation of one great department, with the prevention of disease and the safeguarding of the public health as its main objective. Americans are not at all disposed to forget such facts as those upon which Professor Townsend recently dilated in a speech before the

Biological Station, at Illinois University. The average annual expenditure for the last eight years on the national army and navy would suffice to establish a three million-dollar Rockefeller Institute in every State and territory in the Union, and still leave enough to provide even a more lavishly endowed home for research than the wealthy Pasteur Institute in Paris. It looks as if some day Eugenists will get what they want from the sheer force of circumstances. It is incredible that in Illinois nearly 40 per cent. of the total revenues of the State are spent in caring for the morally, mentally, and physically deficient. How long! is becoming an exceeding bitter cry.

Among the great epidemic diseases of the world typhus fever takes an ill-omened place—ill-omened because but for man's inhumanity to man it would cease to exist. It is the child of war. It revels in overcrowded and unsanitary slums; it accompanies misery and want. One hears of it but little in this country nowadays, but it still has its deadly centres elsewhere. In days gone by, during a certain period, out of over 1,200 physicians attached to Irish institutions almost half succumbed to this frightful malady. To no disease under the sun are nurses and physicians less immune. In Mexico its annual holocaust of victims may be numbered by hundreds. There must be many French soldiers still alive who can remember its awful ravages during the Crimean War. The new edition of Black's Medical Dictionary states that no specific organism has yet been clearly identified in the case of typhus fever. Since last December six American scientists have been studying the disease in Mexico. Three have been stricken down and two have died. It is true that until recently little or nothing was known as to the cause and mode of transmission of this plague to the human race. Almost the only fact that emerged was the danger to all concerned of infection when the patients are massed in the wards of the hospital. Dr. Ricketts, whose loss, with that of his colleague, Dr. Conneff, American medicine is now mourning, joined in 1902 the Bacteriological Department of Chicago University. After his first few weeks in Mexico he began to get valuable results. He found that Rocky Mountain fever was not the same as typhus, though in many respects similar. He communicated Mexican typhus to the monkey. He discovered that it can be transmitted by an insect, pediculus vestamenti, whose English name we can guess. By April 23 Dr. Ricketts and his volunteer assistant, Mr. Wilder, announced that at last they had found, in the blood of this insect and of the patient, a new micro-organism, a bacillus. And, says "Science," there is good reason to believe that this bacillus is the actual cause of typhus fever. Shortly after, and before control experiments could be completed, he was stricken with the fatal disease. Another name has now been added to the long roll of those who, knowing the risks, have counted life as nought in the endeavor to be of some value to their own and to future generations. The remembrance of Ricketts and those predecessors who have sacrificed themselves on the altar of duty are written in letters of gold upon the hearts of their fellows.

Clothes and the Bath.

Is it necessary to undress in order to go to bed?

Writing under the pen-name of "Lawrence Beesley," a physician, who in his professional capacity of ship's doctor and also on pleasure journeys has travelled over a considerable part of the inhabited globe, is of opinion it is not.

He says:

"How often does one hear the remark: 'How tired I am of dressing and undressing, of getting up and going to bed!'

"I have made the same remark myself, and of late have simplified the minor details of my daily routine considerably.

"Why should we all undress and take off all our clothes every night, with the consequent redressing the morning? Why?

"I have lived on board ship and in the tropics, in Canada, and in the desert of Arabia; and I say this, that I have been as healthy and as fit and infinitely more satisfied with life under conditions which practically compelled me to sleep in my clothes—minus boots, coat and collar.

"In so-called civilization, where I live now, I have to remove every 'rag' at night, put on cold pajamas and get into colder sheets, and shiver (during the cold weather) for ten minutes or more, with

the knowledge that in the morning I have to dress once again and am supposed to have a bath.

"I cannot for the life of me see why two hot evening baths per week should not be sufficient for anybody—and personally I have quite given up undressing at night, with the exception, as I said before, of boots, collar and coat.

"It is well known that men who 'rough it,' who sleep in their clothes, and who have not the eternal worry of dressing and undressing, of cold baths, cold sheets, starched collars and all the paraphernalia of the 'town man,' are infinitely happier, freer, healthier and stronger than their city brethren.

"Try it. Sleep in your underclothes—flannel shirt and socks; have two hot baths a week, and save hours per annum and oceans of bad language.

"I am speaking as a medical man of twenty years' experience.

"I believe many chills are caught by the sudden change from thick, warm flannel clothes to thin pajamas and ice cold sheets, which is the general custom in this country.

"I am further of the opinion that it is not a benefit to the individual to open the pores of the skin by constant bathing or to close them suddenly by rapid changes of surface temperature in a climate such as ours—particularly such as it has been lately."

Open Spaces in Cities.

The unbuilt spaces among the forests of houses in large cities are the lungs that give fresh air to a city. The importance of such unoccupied spaces is proved by statistics recently published by Georges Risler in a French review, in which the percentage of deaths from tuberculosis is compared with the percentage of unbuilt spaces in London, Paris and Berlin.

According to these figures, London, with 14 per cent. free space, has a percentage of 1.9 per cent. deaths from tuberculosis; Berlin, with 10 per cent. free space, has 2.2 per cent., and Paris, with 4.5 per cent., shows a death percentage from consumption of 5.1 per cent. In other words, London, with three times the percentage of free space that Paris has, loses one-third the percentage of deaths by tuberculosis, and Berlin shows the same proportion.

This would seem to prove that the sums spent in providing parks, playgrounds, etc., are well repaid by the improved health of the city. In Paris itself the districts around the Champs Elysees, which are surrounded by woods and parks, show a death percentage from tuberculosis of only 1 per cent., while the congested areas show 10.5 per cent.

Improving Car Ventilation.

Dr. W. A. Evans, Commissioner of Health of Chicago, and Professor of Sanitary Science in the Northwestern University Medical School, has been writing a series of articles on ventilation for the Medical Record. His latest contribution concerns the ventilation of cars.

"A railroad car (passenger, Pullman, baggage, express, or postal)," he says, "hurling through the air at the rate of fifty miles an hour, has an air pressure of ten pounds per square foot, and this furnishes more power than any other blower fan in use. If a ventilating duct has its open face exposed to this current of air, a volume will drive in many times the need of the inhabitants of the car.

"The requirements, then, are these: (1) To regulate the volume of air taken in for the different car speeds; (2) to keep down the dust content of the air taken in; (3) to warm the air before it is introduced into the car; (4) to introduce it at the right place; (5) to provide properly located exits for the foul air.

"1. Discussing the first of these points: Sometimes the amount of air taken in is regulated by cutoffs operated by the brakeman. Such is the case on the Pennsylvania Railroad. Here the brakeman sets the ventilation soon after the car leaves the station. A better system is that in use on the Northwestern Elevated in Chicago. They use a small cutoff device in their intake. When the car is standing still the blade hangs vertically and the duct is fully open. As the car speeds up the blade rises toward the horizontal and diminishes the size of the duct proportionately. There is never any question as to getting air enough when the car is under way. The provision must be to keep the quantity down.

"2. In a railroad train the dust is from two sources. The smoke tends to hang along the top of the car. Ducts at this

level are liable to catch a good many cinders and much smoke. The pounding of the cars raises a good deal of track dust. The Pennsylvania Railroad takes in its air above the roof of the car and uses screens to keep out cinders.

"3.In the case of elevated trains the ducts are advantageously located in the floor of the car and take air from below the floor line. The question of the location of the ducts in surface street cars is somewhat more difficult. The short ducts, when the inlets are below the floor level, present great advantages. The only disadvantage is the dust. The swirl of dust raised by a street car can be seen to hang a little in the rear of the car except when it is stopping. The dust at the floor line of the car is far less than superficial observation would indicate.

"3. The keynote of car ventilation is warming the air as it is taken in. A street car jammed with passengers will have only ten cubic feet of air per passenger. If, then, 2,000 cubic feet of air per passenger per hour is furnished the air must be changed 200 times per hour, or, say, three times per minute. No passenger will allow such a volume of air on a cold day without the air having been previously warmed.

"On the other hand, the radiation in the car is usually placed under the seats or in out-of-the-way corners of the car. The result of this is that the seats are usually scorching hot and the remainder of the car is uncomfortably cold. The proper solution is to introduce the fresh air into the car through the radiation. In this way the air is warmed to a point where the passengers will tolerate ventilation. The radiation is cooled and the cold parts of the car are warmed; the car temperature is made more nearly uniform; the efficiency of the radiation is increased.

"4 and 5. In the installations commonly in use, the air is theoretically taken in through the deck sash. The most efficient intakes we have found in such installations are the leaks around doors, windows and joints.

"Deck sashes will sometimes act as inlets, sometimes as outlets, and sometimes as neither, according to the direction and force of the wind, and according as the car is gaining speed, speeding, or losing speed. The great volume of air which comes in through those sash openings which are acting as inlets will flow straight across and out of other sash openings acting as inlets.

"Now, cold air must be heated by something. The heating agencies in a car are the passengers and the radiation. Putting the air in at the deck sash and having the heat of the car heat it before it reaches the passenger, may add to the passenger's comfort. It does not save any in the expense of heating. If the fresh air is warmed enough to keep it from being uncomfortable and is then discharged into the car below the seat level and the foul air is taken out through ducts around ceiling lights, a somewhat uniform upward flow of air is maintained in the car. The partial separation of the fresh from the foul air makes it possible to reduce the volume of air required for each passenger.

"With such an arrangement of inlets and outlets, the Chicago Department of Health thinks it is safe to reduce the air requirements to 400 cubic feet per passenger per hour, and has had ordinances drawn along these lines."

Open Air Schools.

Three years ago the first open air school on this continent was established in Providence, R.I. It was modeled after similar institutions in Europe, and it was then predicted that the idea would one day get a good hold here. While the progress has not been rapid it has been highly satisfactory. In Orange, N.J., such a school is run under the joint auspices of the Board of Education, the Health Department and the Associated Charities. These supply respectively the teacher, medical inspection and supervision of the special diet. A somewhat similar plan is considered for Philadelphia. There are twenty-seven open air schools in America at present, some fifteen or sixteen cities have adopted them as a feature of their educational system and a dozen others are about to take the step.

A gratifying report comes from Chicago, where such a school was opened last year. Its report says that there are now forty-one bright youngsters, who went in as weaklings, and who represent an average gain in weight of four pounds each. The transformation is said to be remarkable in

every respect. Each of these children, ranging from six to seventeen years of age, was afflicted with tuberculosis. Most of them came from poor parents in the tenement districts. They were underfed, debilitated and far behind in their studies. To-day, some of the most backward pupils in the beginning are proving the brightest and all have shown remarkable progress in their school work, besides improving in health, energy and spirits.

The open air school is among the probabilities in every city. It is in line with the conservation of health, and though it is most necessary for those who are forced by circumstances to live in close quarters, there are plenty of cases where the children of those in better circumstances need the benefits of fresh air as greatly as the children of the poor.

A Search Light on British Meat.

An English physician has attacked the conditions of meat selling in London, apparently with facts to back him.

"Meat is handled by unlicensed workmen called 'pitchers,' with filthy hands and reeking clothes," he declares. "The vans in which it is carried are revoltingly dirty, not having been washed since they were manufactured. Many of the carcasses are dragged through the mud and accumulations of vile refuse. When carcasses are hung on the hooks in the general stall a ridiculous effort is sometimes made to remove the dirt by means of filthy rags. The so-called 'humpers,' who handle the meat, smoke and spit at random, and the hooks smell with neglect and rotting serum. Some parts are thrown on the dirty floor, which never is scrubbed, and the meat is carried on the bare heads of the men.

"Customers are compelled to tip the salesmen and shipmen or see their meat wantonly dropped and rolled in the dirt. When the carcasses are leaving Smithfield for the shops of the buyers they are again carried on bare heads, dropped, and often wilfully trodden on."

Some of these facts were hinted at the time of the American stock yards excitement following the publication of Upton Sinclair's "The Jungle." But at that time the search light was turned towards America.

Slums.

Lawrence Veiller writes in substance in "The Survey" that America has at last awakened to the consciousness of her slums. Throughout the land a new sense of social and civic responsibility is stirring. Social workers are now seriously asking themselves, "What shall it profit a man to go to a hospital if he must soon return to some vile slum?"

There is a growing conviction in our cities that poverty is curable, and even preventable. We are beginning to see, as never before, the blighting effect of adverse circumstance upon both the weak and the strong. We refuse longer to believe in the innate depravity of the human race, and seek outside of the individual for the cause of human depravity.

We are rightly charging to our travesties of homes the responsibility for much of poverty, crime, insanity, disease and industrial inefficiency and political degradation. The shame of the cities is upon us.

North, south, east and west share in this awakened conscience.

Strange to say, these beliefs are being translated into action.

Staid New England towns, like New Haven, have awakened with a start to the fact that one-third of their population is of recent foreign importation, that they have not only slums, but a serious housing problem. Aristocratic Baltimore has discovered that she has been "Barbarous Baltimore," and now rises in her wrath, determined to slay the hydra-headed monster that has been sapping her vitality.

Milwaukee, stimulated by her new Socialist leaders, is not only going to stamp out the slums, but proposes to build for its workmen new homes on the city's outskirts.

Los Angeles is wiping out its small slum nucleus. In San Francisco public-spirited men and women are alert and on guard.

Ohio is aroused and militant. Cleveland, the city of civic spirit, and Cincinnati of civic shame, are joining hands with Columbus in sounding the death knell of the slum.

Buffalo, with its miles and miles of small houses, now shows that what has seemed so fair may be most foul, and how the problem of room crowding is inseparably bound up with the problem of race

in her "city of huddled Poles."

Detroit is now fighting her incipient slums; St. Louis, partly aroused, is at work.

Washington, whose blind alleys have for years been the nation's shame, is soon to show the country how a city may deal with its plague spots and make them into gardens of delight.

New York, distinguished for having the worst housing conditions in the world, but long the leader in housing reform in America, continues the leadership. Her 7,000 privies are now a thing of the past, and her 100,000 windowless bedrooms are fast disappearing.

The outlook for the future is hopeful. The old idea that the housing problem could be solved by building a "model tenement" is fast disappearing. In its place one finds emphasis laid upon housing laws which will control the situation for all time; on efficient and vigilant sanitary inspection; on garden cities and model small houses in place of huge tenements; on instructive visitation of our immigrant population, and the teaching of the elements of hygiene in the Public Schools and in the home.

Ozone Purification.

United States Consul William Dulany Hunter, of Nice, France, in a report to the Bureau of Manufactures, tells of the method of purifying that city's water supply by the use of ozone. He says:

"As the water used here for drinking and other purposes was considered to be unwholesome, a new method of sterilization has been adopted. There is an electric power plant worked by water turbines, the force being the water which is afterwards sterilized. The two dynamos are run separately, so that there can be no stoppage while one of them is being cleaned or repaired. The force produced is 110 volts, 500 periods a second, which is transformed into an alternating current, with a potential power of 17,000 volts. This high-power current is conducted to a so-called ozone battery. Each of the five batteries composing a system consists of three vertical copper plates two feet square and one and one-half inches thick, with a space of eight inches between each. In one of these spaces there is a pair of glass sheets, between which the electric sparks decompose the air, which is forced through them by a sucking machine. The decomposed air consists of ozone and azotic acid. The azotic acid is retained and pure ozone made available by passing the decomposed air through a vertical vitrified pipe containing charcoal dust and pieces of cement. The water, under a pressure of a fall of twelve feet, flows through a system of earthen tubes about one inch in diameter and having thirty-three holes each; these tubes pass through a space filled with ozone, which the water absorbs.

"After the first process of sterilization the water flows into a tank in which there is a wire netting supporting about three feet of pebbles. These pebbles divide the water so that it falls like a heavy rain to the bottom of the tank, and a strong ozone current, coming from the sides of the tank, is absorbed by the falling water. The ozone is then extracted by having the water fall on stone steps. Medical authorities declare that, after having undergone this process, the water is absolutely germ-free and that it is impossible to produce any kind of germ culture in it.

"Two ozone plants were built in 1909; one of them gives an output of 39.61 gallons a second and the other 72.99 gallons. Each of these plants is composed of two separate systems, so that there can be no possibility of a shortage of water. A new plant is under construction which is to be large enough to supply all the towns and cities between Nice and Mentone, a distance of twenty-four miles. New waterworks are also to be constructed in the near future at both Cannes and Grasse."

"Common Colds."

The Committee on Prevention of Disease of the Boston Chamber of Commerce has just concluded a most interesting study of over 3,000 individual cases of common colds, occurring in that city in the six months from December, 1909, until June, 1910.

This investigation was begun to show that colds are not due to insufficient clothing, to low or thin shoes, changes from heat to cold temperature, to the breathing of night air or any of the usually accepted reasons why we sniffle during the winter.

The report reads that the Chamber of Commerce seemed to prove conclusively that colds are spread from victim to vic-

tim. Since the slightest cold may make progress to the throat and lungs, end in pneumonia, the importance of proper understanding of this subject is apparent.

A summary of the report shows that the average loss of time for the persons investigated was about two weeks a year, with a loss in money, not including individual expenditure for medical treatment, of $44.34 each per annum. The most common cold is the head cold, and March is the most dangerous month.

The remedy lies in ventilation, whether in office, public building, sitting-room or bedroom. Night air in the city is much purer than day air; there is less smoke belching from city smokestacks, much less dust from street traffic, so that windows should be opened from top and bottom in every sleeping room. Both prevention and cure may be obtained by nourishment and general hygiene and proper clothing, particular importance being placed on the isolation of persons suffering from infectious colds from the rest of the family, or those working with them.

Status of South African Sanitary Inspectors.

Dr. Anderson, President of the South African Centre of the Sanitary Inspectors' Association, speaking at the annual meeting at Cape Town recently, said the status of the sanitary inspector in South Africa was at present by no means what it should be, and, in consequence, he was not able to perform the good service which he otherwise would be able to do. He noticed, however, signs of increase in the estimation in which he was held by the public, and this by ordinary processes of evolution was bound to be brought about. One of the objects of the Association was to increase the rate of that development. Fortunately, during the past nine years it had become more and more the practice to appoint as inspectors men who have gone to the trouble and expense of passing through some course of training for the duties, and have afterwards submitted themselves to examination by a Board of Experts appointed by recognized institutions, and have been awarded a certificate. This had been hastened by the possibility of obtaining in South Africa a certificate from such a well-known body as the Royal Sanitary Institute of Great Britain. After giving an instance of an inspector who was dismissed because of the zealous carrying out of his duties, the speaker said unless such officials, who had to discover offences against regulations, were adequately protected, there was likely to be inefficient and unequal administration. Anyway, an instance such as he had quoted would not *serve pour encourager les autres* to be active in sanitary reform.

Nine Thousand Cases of Smallpox.

Public Health Notes tabulates the cases of smallpox in the United States for the six months ending December 30, as 9,262 cases, with 203 deaths, a record that is not particularly creditable when one realizes that in July last there was not one case in all Japan. In the United States there were seventeen of the States that had more than one hundred cases each, North Carolina in the lead with 1,665, and seven reported deaths. To the credit of the authorities it should be said that they are alive to the situation and are doing their best to persuade the people to be vaccinated. This is a difficult matter with the kind of people who constitute so large a proportion of the citizens. Three other States run to 1,000 cases or more each, Oklahoma with 1,187, Kansas with 1,049, and Michigan with 1,000. Texas comes next with 881 cases, and 28 deaths. Here the State authorities have made such excellent regulations concerning the public health, defining "public buildings" in a very broad way, and making proper rules for their care as well as establishing good standards for cattle, that one is surprised to see so high a rating in what is so truly a preventable disease. In a group are the Middle-Western States, an evidence that conditions there are much alike in all, Ohio 245, Indiana 242, Illinois 276, Minnesota 224, Iowa 187, and Wisconsin 142. Somewhat higher are the States farther west, Colorado 306, Utah 312, Washington 199, and Montana rather low at 123. The Southern States range much the same, excepting Alabama, which records only 52, but the figures from Louisiana, Mississippi, Askansas and Kentucky are defective. These States show how little the importance of reporting infectious disease is understood in some places, whereas it is one of the most important factors to the good health of the commun-

ity, and one which advanced sanitarians would like to see extended even beyond the limits of strictly infectious disease.

Fresh Air for Living Rooms.

W. H. Symons, M.D., medical health officer of Bath, England, presents in an English journal a number of suggestions concerning the ventilation of rooms by means of windows. In this age of free admission of the outside air into living and sleeping-rooms, there is always the very practical question of how to do it inexpensively and at the same time avoid direct draughts. One of the plans suggested by Dr. Symons is available for the French windows which open out in leaves like doors. Opening these partially, a third window may be affixed to the other two so that the three form a bay window, open at the top and bottom, and affording excellent opportunity for the circulation of air. The arrangement may have a partial roof if desired, and is easy to adjust and comparatively inexpensive. For another class of windows, those having sashes, an adaptation of the upper one may be made to form a "double fan." Here the regular sash is shortened and instead of its upper portion two horizontal swing sashes may be made, one hinged at the top and the other at the bottom. A special rail will be needed at the top of the regular sash with two rabbets, and a similar one at the top of the window frame. From the outer top rabbet and the inner bottom one the swing sashes are hung. The two sashes when closed cover both of them the same opening, and when opened, one out and the other in, afford a weather-proof aperture for free ventilation, the size of which is easily regulated. The third plan suggested by Dr. Symons is sometimes seen in principle in this country the baffle-plate. A portion of the glass of the upper sash is cut away across the entire width, and on the outside of the window frame, or to the stonework of the house, is affixed a plate of glass corresponding to the slot in the sash-pane, but somewhat deeper. Similar baffle-plates of wood or of glass are not infrequent here, the sash being raised to give them their efficiency. All three devices are inexpensive means of gaining a continuous supply of good, fresh, outside air.

The Question of Draughts.

Mr. Ronald Campbell MacFie, M.A., M.B., enters the lists in favor of draughts in the "British Medical Journal." "They should be favored rather than feared," he says.

"'I sat in a draught and caught a cold,' is," he says, "an ordinary statement which one must be chary of accepting, although draughts under certain conditions may be potent factors in the production of a cold.

"But they are merely auxiliaries unless they succeed in cooling the blood unduly, and unless certain germs are present they are quite ineffective.

"It is true that if a man live constantly in a moist, warm, still atmosphere, and if his skin be continually protected from the normal stimulation of cool, moving air—it is true that under such circumstances the skin reflexes, if unexpectedly called upon, may forget their business and respond sluggishly and inadequately to the stimulus of cold, and that heat may thus be unduly lost, with deleterious consequences; but the natural well-fed well-clad mammal has active, ready reflexes, and is not likely to be unduly chilled by draughts.

"The skin," he continues, "is certainly meant to be exposed to moving air currents and to vicissitudes of heat and cold; it is surely meant to have a blood supply that ebbs and flows according to the thermal needs of the tissues; it is surely meant to perspire and to transpire, and accordingly to shut off from wind currents and to enclose it in a motionless layer of moist air is to depart very far from the ways of physiological righteousness.

"The bracing effects of dry air and of seaside breezes are largely due to their stimulating effects on the excretory and reflex functions of the skin, and the man who endeavors to avoid colds by avoiding all draughts will not only catch more than his share of colds, but will possess much less than his share of health and vigor."

We may coin a proverb, Mr. MacFie says. "Shut a window and open a grave," to express the modern opposite to the old-fashioned Italian proverb, "The air of a window is like a shot from a crossbow."

Editorial

Disposal of Garbage.

A most important matter, from a sanitary standpoint, confronting large cities, and, in fact, smaller ones, is the disposition of garbage. Two means have been adopted which consider best the health of citizens: incineration and reduction. Burial of refuse except in small quantity, as well as the spreading of it on, or ploughing it into land, or feeding it to hogs on special farms, has proved unsatisfactory.

In Great Britain, the process of incineration has been largely followed and in many instances the apparatus used has arrived at some state of perfection. On this continent the utility of the reduction method is becoming more recognized. Perhaps each method has its particular advantages.

The argument against the incineration method has hitherto been that of incomplete combustion. One of the first incinerators, if not the first to be used in America for municipal purposes, was Andrew Engle's. The central idea here being to burn the garbage on transverse grates by a strong primary fire, and then to re-heat and re-burn, or attempt to re-burn, the smoke and gases, resulting from the first combustion, with a secondary fire. It has been found, however, that the gases released from the primary fire are not wholly retained nor re-heated to the point of ignition unless by an expensive apparatus not a part of the Engle incinerator.

But later advances have been made upon the construction of incinerators. In 1906, a Meldrum furnace was built near Montreal, and demonstrated that it could consume fairly well, garbage, ashes, and refuse in the first burning, at a cost of about eighty cents per ton, including labor, fixed charges and sinking fund and with the production of but inconsiderable nuisance. In Vancouver, about 1907, Heenan and Froude installed a destructor which gives considerable satisfaction at a cost of about 46 cents per ton of refuse consumed. A later furnace of the Heenan and Froude make is in use at Buffalo, and it is there proposed that the power therein developed be used for the pumping of sewerage. These furnaces supercede the Engle type, and their use can result in the development of considerable steam power and electrical energy, and in a profit to the municipality in which they may be installed. In many instances even the clinker as a by-product is marketable for the construction of highways; and there may be a possibility of the recovery of ammonia from later types of destructor furnaces, while the dissemination of noxious gases and odors seems now to be largely avoided.

The inadequate elimination of odors and gases, as well as the liability to injury from explosion and fire, have hitherto been the great objection to reduction plants. To a considerable extent, however, these faults seem to have been recently overcome.

The reduction method first adopted with a view to the utilization of by-products for fertilizing purposes and as greases, is known as the "Vienna, or, Murtz." It might briefly be described as a system of cooking for a period of from six to eight hours, under steam pressure in cylindrical tanks; the garbage being thus macerated and afterwards discharged in the shape of pulp, containing grease, water and oil. From this pulp the water is allowed to escape, and the remainder treated with naphtha to dissolve the grease. The tankage left is then subjected to a drying process and the grease and other products sent to market in crude form.

By another process, the "Arnold," the grease is successfully extracted by steam, but the nuisance element is less avoidable. For this reason the first described, or solvent process, seems to be more satisfactory.

Reduction plants are being worked successfully in a number of cities, notably in Cleveland and Columbus. In Cleveland, the reduction plant is a municipal undertaking, and seems to be operated without the creation of nuisance and at a profit to the city. The Cleveland plant has been in operation some five years, at a total expenditure of about $225,000; and while the city began with a revenue of about 7 per cent. upon its investment, it later re-

ceived over 22 per cent., and last reports indicate that the net profit per ton of garbage treated is about $3.46.

Columbus has improved upon Cleveland in making the reduction process almost wholly automatic. And here the danger of nuisance from the escape of odors has been most largely avoided, because the process is what is known as a closed one.

The Cleveland and Columbus reduction plants seem to point to the possibility of further progress in this direction, and the entire elimination of smell.

It appears, then, that both the incinerator and reduction methods of garbage disposal may be made unobjectionable from the standpoint of nuisance, and may be profitable to the municipality in which they are installed. And in regard to utility, the only difference between them seems to lie in the fact that the by-product market is a home market and a constant one where the incinerator is concerned, but may be variable in regard to the reduction process.

Inter Alia.

The question of sanitation in disposal of the dead is one of moment. Considerations of public health no longer admit in populous centres of the unhygienic habit of earth burial, a habit which originated in the warring carelessness and ignorance of the darkest part of the middle ages, and has resulted in the present co-operative and pollution spreading graveyard as a substitute for the Roman method of cremation or the more ancient custom of entombment. Of the three methods, cremation is immediately the most available from a sanitary standpoint and in cases of necessary haste as the interception of plague is perhaps advisable. But while sanitary, cremation is not strictly burial; it is rather a quick destruction departing largely from religious custom and usually opposed by those directly bereaved.

Entombment, on the other hand, is the ancient method of burial, historically the most commonly adopted and of educative value contemporaneously and to succeeding generations through its encouragement of architectural and religious development. It is the instinctively favored method of disposing of the dead, and while not as immediately available at present where it may be required as the careless method of earth burial nor as available as fire where great haste is necessary, entombment in modern mausoleum practice is comparatively sanitary. This practice consists of crypt disinfecting ventilation, tending to exclude sentimentally objectionable influences from the crypt and at the same time prevent what might otherwise result in disagreeable outside effects.

When one looks back on the year recently ended, it is possible to recall a number of events that have had a most important bearing on the question of public health, for although the actual discoveries of new means of treating or preventing disease may not have been remarkable, great progress has been made in the development of principles previously discovered and in their application to curative and preventive medicine. Again, a vast amount of very important medical research work was carried out in 1910, the full significance of which cannot yet be brought home to public realization owing to the highly technical nature of the investigations in question; but there is no doubt that these laborious researches—particularly those in conection with cancer, bacteriology, radiology, and tuberculosis—will eventually lead to results of the utmost value. Indeed, the investigations of many well-known bacteriologists and others have now gone so far in certain directions that startling discoveries might be made at any time.

The radium treatment is one of the methods of dealing with disease in which considerable progress has been made. Twelve months ago it was beginning to be realized that radium had very great possibilities from the medical point of view, but there was considerable uncertainty as to the directions in which the investigations on radiotherapy might be pursued to the best advantage. The treatment of cancer by radium has been investigated by our own specialists, but not to the extent that it has been abroad; the results obtained in Paris, and demonstrated in London, certainly gave an impetus to researches of the same kind in this country. Further developments in the radium treatment have

been obtained by the use of "radium-water" and the establishment of resorts where "radium baths" can be had.

A good deal of work was done last year in regard to consumption and tuberculosis generally, not only from the technical and bacteriological point of view, but also in the matter of its prevention amongst the poor and crowded communities of large towns. Considerable progress has unquestionably been made during last year in respect of our knowledge of tuberculosis in children, and as to its beginnings in the human system. A well-known Austrian authority, Dr. Franz Hamburgher, in an address to the National Association for the Prevention of Consumption and other forms of Tuberculosis, maintained that nearly everyone is really infected with that disease in childhood, but that the liability for its development decreases with every year of life; his conclusions have not been upset so far. Debates in this connection have revealed a notable prevalence of abdominal tuberculosis in children, said to be derived from tuberculous milk.

Further progress has been achieved in regard to the prevention of consumption by the development of the dispensary system of dealing with this disease. A "tuberculosis dispensary" possesses an organization which not only provides for the advice and treatment of patients, but which gets into touch with their home conditions, and endeavors to remedy these as far as possible, wherever it is found that such home surroundings predispose to the spread of tuberculous disease. So far not many of these dispensaries have been established, but it is likely that the efforts of the Associations for the Prevention of Consumption will shortly lead to the establishment of numerous others.

Then bacteriologists have been largely concerned with the further investigation of the treatment by vaccines. Such preparations, when injected into the system, have been found by practical experience to increase the resisting powers of the blood in many conditions. So far the bulk of the medical profession, represented by the general practitioners, cannot be said to have warmly taken up this treatment; a specialist in "vaccine inoculations" told the writer that progress with this important treatment would probably be much more rapid if the physicians in general practice were more ready to take advantage of it; as it is, they appear to be inclined to try it as a sort of last resort, and only in very difficult cases.

In one important respect last year was marked in a somewhat disquieting way, namely, by the unwonted activity of two Oriental pestilences that we had come to regard as practically out of the sphere of possible dangers to public health in northern latitudes. The rapid extension of Asiatic cholera from Russia to contiguous countries, further to Italy, Northern Africa, and ultimately to Madeira, can only be viewed with a feeling of misgiving; it must be borne in mind, of course, that the cholera epidemic in Russia raged more extensively than at any time during the past eighteen years, it being estimated that over 100,000 died from its effects during the year under review. Again, definite signs of increased activity of plague made themselves evident in various parts of the world during the year. It must be admitted then that the past year has closed with a distinct threat from these Eastern dangers, and whilst there appears to be no cause for alarm now, extra precautions may have to be taken to keep cholera and plague from gaining a foothold in this country during 1911.

An interesting innovation in medical science which came under notice last year was the application of the cinematograph to the life-history of certain parasites which, on occasion, infect the blood of mankind. Remarkable exhibitions of such "living pictures" of the blood and tissues in various diseases were shown at St. Thomas' and King's College Hospitals, in London, England. The great magnification obtained enables the movements of parasites, which had entirely escaped observation up to comparatively recently, to be viewed with the greatest ease; such a parasite is that which produces the deadly "sleeping sickness" of Africa, and rejoices in the name of "trypanosoma gambiense."

In considering last year's work in sanitary engineering, it cannot be said that anything startlingly novel has been

brought to light. Indeed, we shall not be far wrong in saying that there is nothing really new to report. We think, however, that it may be justly remarked that a great deal more common sense is being brought to bear year by year on the question of sewage disposal. Any one process is not being employed in such wholesale fashion as was formerly the case just because it was fashionable to use it, but our engineers are getting more and more to understand the principles underlying the science of sewage disposal. So expert are they becoming in this direction—that is to say, in the manipulation of the organisms beneficently provided by Nature—that it is difficult to see how there can be any very great improvement in the processes at present extant. It is, however, by no means always that full advantage is taken of existing knowledge. Then, again, the question is frequently brought up as to whether, in treating sewage as we do, we are really proceeding on the right lines. Nature clearly intended the earth for the disposal of sewage, and though we have learnt very accurately to reproduce artificially the action of the earth, we are losing the enrichment of the soil which would ensue from the proper application of sewage to land.

A series of experiments, however, have been carried out by Drs. P. Remlinger and O. Nouri to ascertain (1) whether pathogenic germs in the soil are absorbed into the tissues of plants growing in such soils, and (2) whether such germs are carried on the stems and leaves of growing plants. Such vegetables and fruits as beans, celery, cress, cucumbers, onions, peas, radishes, salads and strawberries were investigated. The experiments were only of a laboratory order, but were carried out in such a manner as to approximate as nearly as possible to natural conditions. The soil was freely contaminated with pathogenic bacteria, the vibrion of cholera, the bacillus of anthrax, *B. typhosus*, and *B. prodigiosus*, &c. In the first set of experiments the seeds were allowed to germinate, and when the shoots were about 3 inches above the soil cuttings were taken and cultivation made of the juices. In no case was there any result, and the experimenters consider themselves justified in stating that microbes do not penetrate into the interior of growing plants. As regard outer contamination, the results were not so conclusive. Some of the germs, notably those of anthrax and *B. prodigiosus*, were found more or less frequently on the surfaces of the plants. Apparently, however, those of typhoid and cholera were not found, and that of tuberculosis but seldom. The chances of contamination appeared to decrease with the age of the plant.

There is pressing need of improving the sanitation, or rather, the lack of it, in most of our schools. We have scarcely one school in the county where there is a properly arranged and managed drinking system. Many of the schools are still clinging to the primitive and unhealthful bucket and dipper. A few have barrels and faucets to provide the pupils drinking water, but there you will find the public drinking cup. The worst thing of all, however, is our antiquated and in many cases actually repulsive and dangerous system of providing closets and lavatories. Of course we had to have buildings and equipment first of all. Now the great problem comes in the conservation of the health of the pupils—and that means also the conservation of morals and decency. Sanitation of the schools has been sadly neglected. This is so because of the lack of funds sufficient to erect the buildings and equip them and at the same time arrange surrounding conditions as we would have them. But we know that if the School Improvement Associations and the Mothers' Clubs and the patrons of the schools generally will take the trouble to investigate these vital matters concerned with the health and sanitation, there will be such an aroused public sentiment for better lavatories and closets in the schools that their provision will certainly be made soon.

It has been suggested recently by those familiar with the work being done by the School Improvement Associations and Mothers' Clubs that these excellent organizations deserve much credit for their interest expended for the most part upon the interior of the school rooms and the immediate surroundings, such as fences and lawns and playgrounds, but that if some of the ladies would take it into their heads to examine the vitally important conditions existing in closets and lavatories at

the schools and would devote more attention to sanitation, they would see that their work has only begun.

Towels are used infrequently in the public schools of a city. The children come directly from home in the morning where they have had the conveniences of the home with which to wash. They go home for lunch and after the afternoon session return home immediately. Consequently there is small opportunity for towels to be used.

Any movement to provide the school with a number of towels is said to be superfluous. It would be a needless expenditure of money. About the only place that towels are used is in the locker room and baths, and individual towels are provided there.

Paper towels as the remedy for any insanitary conditions that may exist, are thought to be unsatisfactory. It has been determined from samples which have been received that from two to six towels are required to dry the face and hands after washing. A great litter of paper would accumulate from the use of so many. Paper also fails as an absorbent.

It is well to urge Boards of Education to build school houses fit for children to live and work in. It is well to urge them to employ janitors who understand how to keep school rooms in a sanitary and healthful condition. But good school buildings and good janitors alone do not insure healthful conditions for the children. Very much depends upon the attitude of the superintendent and teachers. If a teacher insists upon maintaining her own standards of temperature and ventilation and light whether they agree with the general plan or not, the children can hardly escape discomfort and injury. Temperature is indicated by thermometers and not by individual feelings. Ventilation and light should be regulated by definite laws and rules and not by personal whims and opinions.

Parents are becoming more and more anxious about the health of their children. They are asking for the building of good school buildings, well lighted, well heated, well ventilated, and well supplied with pure water and decent toilet facilities. They are demanding the employment of janitors who know what dirt is and who know how to get rid of it; who know how to heat and ventilate the school rooms, and who will see that it is done. Now, some of these same parents are discovering that some of the ills which they have complained of, lie at the door of the teacher. In the same building may be found two rooms very different in cleanliness, in the wholesomeness of the air, in the evenness of the temperature, and in the general conditions of health and comfort. The difference cannot be charged to difference in structure and location of the rooms or to the difference in janitor service.

The real cause of the difference is found in the two teachers, in their different knowledge and attention to the matter. Often this difference in the teachers is accepted by a different attitude on the part of the janitor toward these two teachers. He finds that one of them joins with him in keeping boards and desks and floors free from dirt and in maintaining the proper physical conditions. He finds that the other adds to his burdens and seems indifferent to his efforts to keep the room in a proper condition. Very naturally there is a difference in the way he attends to the two rooms. Where his efforts are appreciated and supported there he does his best work.

The health of the school children is a prime consideration in the management of our common schools. The time has come when the parents of these children are demanding that those in authority, Boards of Education, superintendents, teachers and janitors shall join together and work together to establish and maintain such physical conditions as are essential to the health and comfort of the pupils.

One of the chief benefits to be derived from games on the part of children is the development of the love of fair play. The play teaches them to be honest, and to be good losers, for they are taught that it is as manly or as womanly to lose with good grace as it is to gain victories.

Without the exercise necessary to health in childhood the pupils can not be expected to show the proper advancement in

their studies. Boys like to work with tools and there should be shops provided where they could do little jobs of carpenter work. A child has energy that wants an outlet and the work provides such an outlet. But when they work they think, and the workshop thus serves in the double capacity of aiding in building, both the body and the brain. There should be plenty of room provided for play grounds for each school. There should be plenty of room for the boys to play ball and their rougher games without interfering with the quieter play of the girls. Part of the grounds should be used to teach the pupils the rudiments of agriculture, which could be done by having them work in a patch of garden which they could take care of. Above all the teachers must remember that play is absolutely essential to healthful development of a child, and they should superintendent and aid the children in their play.

The medical inspection of schools, the open air school room and the open air recovery school are matters of public health conservation, whose virtues have been demonstrated in other countries. The medical inspection of school children means the detection and isolation of contagious diseases, nipping the bud of epidemic and preventing unnecessary sickness and death. It means the correction of physical defects of teeth, eyes, ears, nose and throat acting as handicaps to general health and progress in grade work.

School hygiene is not spectacular, displaying its virtues in the beauty of public buildings. It is displayed rather in physical health the basis of mental and moral progress.

When we attempt to remedy one form of social evil to the neglect of all the reat, the results will not be satisfactory to the myopic reformer, who would drive prostitutes to prison, suicide or even segregation. No one social impurity can be elimated from a community while the business and social life remain corrupt in a thousand different ways.

People should be taught the extreme importance of light and air to life and health. A crusade should be started against useless curtains. Every house has show curtains which are never used. Blinds, also, are drawn to keep out the least peep of sunshine in order to save the carpet and incidentally ruin health. In every bed-room there should be a clear opening in the window at night for pure air, free of blinds and curtains summer and winter.

The veil is another device for swallowing impure air and lowering vitality. It is principally worn, not because it is necessary to keep the hat on, but because it is supposed to be "becoming."

Further, to improve the general health, and thereby to keep consumption at bay, more work and less food are required for one section of the community; vice versa for the remainder.

Bad housing begets low ideals of living. If children are reared in an environment of filth, litter, dampness, darkness, putrid odors, and immodest family and neighborly relationships, the future citizenship will consist of men and women willing to content themselves, if not cheerfully, at least without protest, with such conditions. Many a child of the tenement has grown to a noble and conspicious career, but the vast majority are content to reproduce through long and tedious lives, the conditions under which they made their advent into the world.

Bad housing sows the seed of immorality, of betrayed womanhood and of fallen virtue. The more bad housing, the more Florence Crittenden homes, the more reform schools, the more jails, the more police, the more divorces, the more blighted homes.

Dr. Woods Hutchinson says we are winning the war against tuberculosis because we are providing for better housing, more playgrounds, better food, decent shops, cleaner workshops and shorter hours. We have laid low the bugbear of the transmission of the disease by meat and milk and heredity while concentrating the fire on the infected house and tenement room —the place where we now look for new

cases is the place where the old case existed.

Many tenants make a better tenement as much worse as they are themselves. But it is oftener the case that better families are made worse in both their habits and character by bad tenements. Some of the better and some of the worse landlords are those that live in the houses which they own, rent and sublet. Many of them share the discomforts of their tenants and are kept almost as poor as the latter by their efforts to pay the interest or the principal of the mortgages on the building, which they are trying to purchase.

An increasing proportion of city born and city bred people are so accustomed to a crowded district that they prefer to live in it. They are "lonesome" when by themselves and fear they would "die of homesickness in the country."

Badly-ventilated cars are the most effective pneumonia exchange that menaces the public health. Pneumonia is one of the most prevalent and most deadly of the easily communicable diseases. The germ of it is so small that it floats easily in the atmosphere. It is tolerant of cold temperatures which moderate the virulence of some of the other pathogenic cocci. It is to be found at all times and almost everywhere, particularly in the noses and throats and upon the tongues of the human species. Pack fifty people in a close car, half of them afflicted with slight, moderate or severe colds, and every breath exhaled and inhaled is loaded with poison. The loading is a continuous process. In a close apartment, made foul by the breathing of many people there is a hothouse condition for the dissemination and propagation of pneumonia and other communicable diseases.

A large percentage of the measles, scarlet fever, diphtheria, mumps, whooping cough, tonsilitis, and many other easily communicable diseases, are undoubtedly exchanged in badly ventilated cars. Any individual coming from a household where such diseases exist may bear the infection and communicate it to other individuals, who, at the inopportune moment, happen to be particularly susceptible to it. Car ventilation is no complex problem like the ventilation of a house of many rooms. The car contains but one large compartment. It is most of the time in rapid motion, so that fresh air will be taken in and foul air carried out by merely providing inlets and outlets of proper location and capacity. These may be installed with little expense. The chief expense involved in ventilation is through increased coal consumption, for where the air is changed rapidly more coal must be used to heat the greater volume to a comfortable temperature.

All city governments should be free from partisan control. Municipal politics is largely responsible for corrupt administration in any municipality. This is demonstrated by the recent scandals in Montreal and other cities.

Our cities should be run on business bases like large corporations. Political graft then would cease and the welfare of all the people at all times would be attained. The manufacturing interests of the city should be fostered with much care.

We glory in our great industrial systems, but forget the workingman in our pride and boastfulness. The laws ought to be enforced with vigor with regard to the sanitation of the laboring man's home. It is the duty of the authorities to make a more careful inspection of tenement house districts. The workingman who is a principal cause of our great industrial work, is being neglected.

We advocate the establishment of special parks for the workingman, not the parks for the automobile of the millionaire or the carriage of the fashionable society woman, but breathing spots where the man of toil can rest and enjoy himself after the day's work is done. These would be oases in the city's desert for the workingman. The sooner these are planned in large centres of population, the better for the citizen and the country at large.

Library, Laboratory & Clinic

British Quacks and Public Health: Information of considerable interest as to the extent to which unqualified persons are usurping the functions of the accredited medical man is furnished by a Blue Book issued from the British Privy Council office. The volume embodies the replies of 1,600 medical officers of health to an official circular inviting their opinion "as to whether the practice of medicine and surgery by unqualified persons is assuming larger proportions, and as to the effect produced by such practice on the public health." The opinions thus obtained are presented in the volume which has just been issued.

As the result of the replies, says a prefatory memorandum, it is difficult to say categorically whether the practice of medicine and surgery by unqualified persons is increasing. In some districts the evidence is distinctly in this direction, while in others there seems to be very little of such practice. The report states that "prescribing by chemists" is "so common as to be practically universal throughout the country. Chemists are resorted to especially by the poor, and it is 'comparatively rare' for a general practitioner to see the child of working-class people until it has been medicined for several days by a prescribing chemist."

With regard to the effects of the practice on the public health, complaint is made by various medical officers of health that chemists do not know, or only imperfectly know, the diseases they treat, and that consequently their prescribing is for the most part superficial and directed only to the symptoms. Infectious diseases are frequently overlooked, and the treatment of infants' diseases is regarded as having some bearing on infant mortality.

With reference to herbalists, these, it is stated, are especially prevalent in the populous boroughs of Lancashire, Yorkshire (West Riding), Nottingham, and Derby. In one city the herbalists are stated to number between forty and fifty, and to have more than doubled during the last twenty-five years. They treat "practically all diseases," and their practice is lucrative.

According to the report, they seriously diminish by the delay, which occurs, the chances of cure, in tuberculous or chronic phthisis, by their indiscriminate prescribing of cough mixtures for respiratory diseases. They cause, in the view of one medical officer, "a great amount of unnecessary pain and suffering and premature death by their treatment of tumors and cancers ,and spread infectious disease by wrong diagnosis.

The bonesetter has a "very great vogue" in Cumberland, Northumberland, and Durham, and does a large amount of work in Lancashire. Many bonesetters also practise in the Welsh mining districts. In one large town in the North of England they are stated to have increased at least 40 per cent. during the last ten years. The increase in their practice is attributed in some cases to the Employers' Liability Act.

Bonesetters in some districts enjoy a large amount of public confidence. "The Northumberland and Durham Miners' Permanent Relief Fund, a very large friendly society, of which practically every coal miner in the two counties is a member, has recently decided to accept certificates from bonesetters in cases of accident as equivalent to certificates of medical practitioners. In Wales, belief in these men is said to be implicit.

A relatively small amount of harm, it is stated, is done by bonesetters who undertake minor surgical cases only, but "irretrievable" injury is sometimes caused by the treatment of more complicated cases. Their lack of knowledge prevents them from distinguishing tubercular bone disease from an ordinary dislocation.

In most places where the matter is referred to at all it is stated that the "practice of dental surgery by unqualified persons" is on the increase. Christian Scientists and Faith Healers are also increasing, mainly in Sunderland, Manchester, Rochdale, East Sussex, Halifax and Bradford.

A long section of the report deals with proprietary medicines. It is pointed out that not only are such medicines largely purchased by the poorer classes, but the

"well-to-do have recourse to them in a large measure." The facility with which they can be obtained is strongly condemned. Many of them, it is stated, "contain powerful poisons."

As to their effects on public health, they have "enormously increased the amount of self-drugging," and, in cases of incipient phthisis their use may give rise to delay resulting in the disease becoming incurable. The practice of giving such medicine to infants and young children is "strongly condemned as harmful," and some medical officers allege that the use of such drugs as teething powders "has an important bearing on the question of infant mortality." The replies received on this matter make these among other suggestions:

1. The composition of all advertised remedies should be stated.
2. Their prescription and analysis should be determined by Government analysis, at the vendor's expense.
3. The sale of headache powders and such like drugs should be prohibited.
4. The sale of infants' foods should be regulated.

Unqualified practice in eye diseases is strongly condemned in all quarters. By the unscientific methods that have been employed, it is stated, eyesight has been seriously injured, and even where no apparent injury has been inflicted the spectacles supplied have been quite worthless. This is especially the case in respect of school children.

A "mass of evidence" on the connection of unqualified practice with the spreading of infectious disease has been received, and reveals that "throughout the country the public health is to some extent prejudiced by unqualified persons treating" such cases. These, amongst other instances, are given of expensive mistakes:

Small-pox. — (1) Outbreak spread through diagnosis by a herbalist as chicken-pox. (2) Herbalist treated a case as "acne," leading to serious outbreak. (3) Treated by chemists and not recognized. Five persons infected, of whom one died. (4) Treated by chemist as skin disease. At least one other person infected. A similar instance at another town was much more disastrous and resulted in at least one death.

Diphtheria.—(1) Outbreak largely kept up, in medical officer of health's opinion, by unqualified practice. Mild cases treated by chemists or herbalists for "ulcerated throat," "enlarged glands," or "mumps," and never isolated. Children returned to school, and disease spread further. (2) Treatment by untrained medical enthusiast (a schoolmaster) resulted in death. (3) In 1907 a serious attack in a village continued for three months, attended by an unqualified practitioner. No notification made, and outbreak only discovered at inquest on a fatal case.

Scarlet Fever.—(1) Spread owing to a chemist treating children in whom it was not recognized. (2) Outbreak in 1902 undoubtedly spread owing to district nurse attending first child attacked during several days for what she called "rose rash." (3) Unrecognized case treated for "want of blood" with patent pills.

A case of measles was treated before eruption by a herbalist as consumption, and a case of chicken-pox was wrongly diagnosed by a chemist, with the result that an outbreak occurred, and over sixty persons suffered.

"Wise women," says the report, still do a certain amount of medical and surgical practice in rural districts, and in a few cases belief in witchcraft is still held by people.

"*Induced Cell-Reproduction v. Cancer.*" *By Hugh Campbell Ross. London: Murray*: Five years ago Dr. Campbell Ross (a brother of the Prof. Ross whose name will for ever be connected with the story of tropical diseases) was a naval surgeon. His ship was stationed in the Mediterranean. He was experimenting with blood, which he was cultivating at various heats for definite purposes. After gun-practice one day, thinking himself secure, he heated some blood in tubes at a temperature of 37 deg. (Centigrade). Suddenly an extra gun was fired, and most of his apparatus was thrown into utter confusion. Thinking the experiment hopeless, he did not look at the tube of blood in the incubator till the next day, when he discovered that the shock had mechanically increased the temperature to 60 degrees, without otherwise damaging the apparatus. As a result "the red cells, which had been resting on the surface of the jelly, were now diffusing as a cloud through the jelly itself." That trifling and not very inspiring mischance discovered to Dr. Ross (who acted upon a suggestion by

his brother) a new method of examining blood corpuscles, and so paved the way to the most momentous piece of physiological investigation since the equal civil war which makes up the republic of man was first revealed.

To put it shortly, Dr. Ross claims, by this accident, to have discovered a new mode of observation, and by it to have found the cause and cure of cancer. His results are not of a broadly, boldly striking kind, and it is not always easy to follow their tendency. But once they are grasped, the overwhelming importance of them is obvious.

Organic disease of the human tissues, it has been long established, is an over-balance of the well-poised war between the beneficient white blood-cells (the leucocytes or phagocytes) and the malignant germs. Sometimes the leucocytes win, but win too vigorously (or "over-proliferate"), and become themselves malignant, as in cancer, according to the theory of Dr. Ross. Leucocytes multiply, or proliferate, by division: their normal multiplication is called "the proliferation of healing:" the process of division has been seen taking place in the kindred white cells, the lymphocytes. The problem of cancer-research—indeed, of all cytology—is threefold, if it be stated properly, without the esoteric claims of ultra-physiology: (1) to discover how the leucocytes divide; (2) to find what makes them do so; (3) to control their proliferation. Dr. Ross appears to solve all three issues.

First of all, the new "in vitro" method has enabled him to see microscopically, and to record by microphotography, the vivid action of the living leucocyte, instead of merely (as hitherto) a dry stain of dead blood. The blood is allowed to suffuse a thin jelly, on a microscopic plate, and is kept alive—for ten minutes perfectly, for longer, imperfectly—by regulating by the temperature and by adding alkaloids (especially atropine) to the staining dye (azur), which makes the movements plain. Dr. Ross seems to prove that the stimulating alkaloid causes division; and he states that he so manipulated his apparatus and his formulæ that the possibility of unknown elements was eliminated.

So much for method. Dr. Ross then noted carefully the exact movements of the dividing leucocytes. He found them practically uniform under the stimulus of azur stain:

"The method of division of leucocytes and lymphocytes is so constant that we thought it was reasonable to expect that the proliferation of healing would be ultimately proved to take place by a similar process, and that if so there must be produced in an injured tissue some chemical substance very similar in its effects to that contained in azur dye."

He examined the blood of cancerous persons. It exhibited precisely similar movements, more especially in regard to the reduction of granules composing the nucleus of the white blood-cell. He had, in short, produced a state of things, by artificial means, which natural means produce in the partly-dead and partly-living tissues of a diseased person. That was only a parallel, perhaps, but it was enough to go upon.

The next step was to discover by experiment what it was in the cancerous tissues which had the same effect as the artificial azur dye. Extract of suprarenal gland, allowed to putrefy by being kept, was found to cause division in leucocytes: pure sterilized extract was ineffective, except when allowed a long period of action, or strengthened by atropine. Further investigation showed that of the constituents of this extract kreatin is the most efficient, or xanthin, if atropine be added. Globin has also this effect: and there may be other agencies yet unknown. It is not clear that a cell cannot anyhow divide of its own accord without some such stimulus; but the argument from silence is very strong—no cell has ever been seen to do so: and it is now certain that the agents mentioned do cause division, or proliferation. "Cell-death induces cell-birth" automatically; and Dr. Ross has discovered the obstetric details.

What is necessary to cure cellular disease, therefore, is at once to promote healthy cell-birth and to prevent over-abundant proliferation; and it is clear that certain known agencies achieve this end in the blood-cell itself, whatever the case in the individual person, who may contain in his body unknown modifying factors.

Dr. Ross has begun to test practically what he believes to be his experimental triumph. He has found, in his practice at the Royal Southern Hospital, Liverpool, that external dressings of globin and internal injections of defibrinated blood have, so far as he has as yet been able to ascer-

tain, immense curative effects. He will not say that they will cure all cases of cancer. He merely states his necessarily limited experience, and gives it value by his remarkable experimental demonstration of the causes and manner of cell-proliferation. Even if his particular remedies should eventually prove to be less efficient than they seem likely to be, he has, perhaps, as he claims, opened "a new vista in pathology."

A Text-book of Public Health. By John Glaister, M.D., D.P.H. (Camb.), F.R.S.E. Second edition. Edinburgh, E. and S. Livingstone: This book is the second edition of the second part of Dr. Glaister's "Text-book of Medical Jurisprudence, Toxicology and Public Health," and will be hailed with pleasure by the student of Public Health matters. Even in its first edition the original book had a tendency to unwieldness, and when the time came to revise and reissue it, it was found that the modern growth of the subjects dealth with was so extensive that one work would be out of the question and, in consequence, we have the two. That Dr. Glaister has been wisely guided in arriving at this decision we have no doubt.

The general arrangement of the subjects is precisely the same in this volume as in the former, but every division, has of course, been amplified and brought up to date. The great advancement of knowledge during the past years has in many instances necessitated almost entire re-writing. Several new features are included, the principal of which is the introduction of a fairly full treatment of Sanitary Law. This is not all placed together in one section of the book, but the law relating to each subject is set out in the same section as that subject, and consequently the student will find to his hand the law dealing with each branch of his study instead of having to consult several books or Acts of Parliament. This feature alone should commend the new edition to all serious students of the matters therein dealt with. The author has refrained from introducing to any great extent illustrative legal cases owing, as he states in his preface, to the relatively large amount of space required to present an adequate account of the bearings of each case.

The book is well got up, and should be found on the shelves of all interested in these subjects—whether they already possess the first edition or no.

Education in Sexual Physiology and Hygiene. By Philip Zenner. Cincinnati: The Robert Clarke Company: To quote the author of this little book:

"There is a crying need and growing demand for the instruction of children in sex matters. A lack of such instruction does incalculable harm.

"This volume dwells upon methods of teaching which should secure the good without the ill effects of such instruction."

The author has succeeded in his task of putting sexual hygiene into words simple, clear and forcible enough to reach the general understanding. Undoubtedly, instruction as to sexual matters should be far more general and more thorough than it is at present, and in this small book by Dr. Zenner, teachers and parents will find a valuable assistant. Teachers and parents are shown how most effectively to carry on the necessary work of education in this special line of sexual physiology and sexual hygiene.

Morse on Children's Diseases: A new food and remedy for children troubled with constipation is suggested by Dr. John Lovett Morse, of the Harvard Medical School and Children's and Infants' Hospital, the Japanese agar-agar. This is the well-known culture medium of bacteriologists, the gelatinous matter of certain sea-weeds, which is rich in hydro-carbons, and is resistant to the action of ordinary intestinal bacteria. Its efficacy in disorders of the kind noted by Dr. Morse lies in this fact and because it is little affected by the process of digestion, and it absorbs and carries with it through the intestinal canal considerable quantities of water. It is, therefore, of value in the treatment of adults whose difficulty is in the too complete digestion of the food and the absorption of all the water, leaving the dejecta small in quantity and dry. Agar agar supplies more material and in moist condition. Dr. Morse has been able to find no accounts of its use with children, in fact, some authors state directly that it must not be used with them. But it seemed a reasonable remedy so he has tested it on children affected with this type of disorder, and reports very satisfactory

result. The principal difficulty has been to induce the children to eat the agar. None of them will take it dry, as will adults, nor do they care for it with milk and sugar, like blanc-mange or sea moss farina, which it resembles, or a cereal. Indeed, even when mixed with a cereal the children will separate the pieces and spit them out. No harm can result from an overdose

The same physician has been making interesting investigations in the diagnosis of meningitis in infancy and childhood. One line of this work has been among the reflexes. If one pats a great Saint Bernard dog on the side, the dog will try to scratch himself with the hind leg on that side and at the same time give a very popular exemplification of the movement known as the reflex. Brudzinski had noted reflex actions of one leg when the other was moved, that was apparent in sick children, but never in the well. A year or so later the same observer called attention to a "neck sign," in which a movement of the head towards the chest was accompanied by certain reflex movements of the legs at hips and knees. Since this sign was new to science Dr. Morse made, on his own account, a test with four hundred children sick and well to determine the indications given by these involuntary movements. Ninety of the children were well and the others mostly with organic or infectious diseases, no one of which gave response to either sign. Other patients with affections of the nervous system and meningitis were examined and from the whole research the conclusions are voiced, that neither the neck sign nor the other reflex action are present in well children or those ill with diseases other than of the nervous system. They are almost never present in diseases of the nervous system outside of meningitis. The neck sign is much more constantly present. Their presence in an acute disease is strong evidence in favor of meningitis, although their absence does not exclude the disease. They occur in all types of meningiitis and are of no importance in differentiating between them.

Sanitation and Sewage Disposal for Country Houses: Perhaps the simplest and most common method of country "sewage disposal" is by a vault dug in the ground. This has many objectionable features, chief among which is the possibility of spreading disease. Water from it sweeping through the ground may carry poisons to well or cistern. It has been proved that in this way disease germs may travel several hundred feet. Flies also carry the filth and disease to food material in the kitchen. Such a danger may be prevented by the generous use of airslacked lime daily.

Another method not so common in America, but frequently used in England, is the cess-pool, usually built with a dry wall of rock or porous brick, so that the liquid may seep out into the surrounding soil. This is even worse than the first method, because the danger will last longer.

To substitute for these old and unsanitary methods, William C. Davidson, of the University of Missouri, in "Sanitation and Sewage Disposal for Country Houses," has worked out plans for several up-to-date methods of sewage disposal. These are designed to suit the needs of the moderate priced country home whose builder desires conveniences and comfort.

The simplest method is one much used in older countries, called "dry closets." Plans are given for a concrete catch basin system which is said to give good results. A system of septic tanks is described and explained, and directions are given for building it. The matter of final disposal of the waste is thoroughly discussed. Different methods of returning it to the land are shown. There is also a section which gives general direction for installing plumbing in the country house. Estimates of the average cost of such systems are given.

Plague of New Type: From the beginning of recorded history the Orient has been known as "the mother of plagues," and it therefore is not surprising that China again should be in the grip of one of these frightful epidemics. The present plague is considered most virulent, nearly every case being fatal. There appears to be also a novelty in the nature of the disease, for instead of being of the bubonic type, it is said to be pneumonic and septic.

What is "the plague"? An international sanitary conference that discussed this question in 1897 at Vienna concluded that it was caused by a bacillus discovered in 1894 by Kitasato and Yersin of Japan, and was spread largely by rats, mice and certain other animals. The obvious lesson of importance in this finding was to destroy

the rats and mice, and much has been done in the last few years through this means to stay the progress of outbreaks.

Dr. Kitasato, in the present instance, is unable to affirm positively how the epidemic originated, but favors the theory that the first victim was a Chinese trapper, who contracted the disease from the fur of a Mongolian rodent, the bartagen, since when it has been spread by human agency, not by rats. This circumstance helps to explain the exclusively pulmonary character of the disease, the most reasonable hypothesis being that the filthy personal habits and overcrowding of the Chinese promote the contagion through germs from the sputum brought into contact with the clothes, hands, mouth, etc., of the victims, and thence gaining entry to the lungs, whereas the bubonic plague usually is contracted by bites of fleas or from plague-infected rats. The bacillus is not transmitted through the air.

That the disease is aggravated if not developed by bad living in the sanitary sense —poor or insufficient food, overcrowding, foul air and filth—is well known. Cold weather appears to check its ravages in European countries, which have been scourged by it many times. Always it has traveled westward, usually along the ancient courses of traffic between Europe and Asia, over or along the Mediterranean Sea. Writers of ancient Greece and Judea describe its ravages. In Rome it appeared several times before the beginning of the Christian era and in the year 170 A.D. in the reign of Marcus Aurelius it raged over all Europe and Asia.

The most frightful form of the plague known to history was "the black death," which within the last six months has appeared in England and has been virtually overcome by modern sanitation. But, appearing in 1340 in Italy, the disease spread northward and throughout all Europe carried sudden destruction to millions. England and Scotland suffered greatly from it, and Ireland in less degree. The Scandinavian countries were frightfully devastated by it, Norway losing two-thirds of her population from it.

London's "great plague," which began in December, 1664, is said by some writers to have caused 100,000 deaths; the mortality officially recorded was 68,596. It was graphically described by Defoe in his "History of the Plague." Fires were kept up day and night to purify the air, and it was believed the infection was not fully destroyed until the great fire of 1666.

The "black death" received its name from black spots that appeared on the skin of those afflicted with the diease. Tumors of the glands, stupefaction and expectoration of blood marked its development. No remedy was known for it. Those who could afford to do so fled from a town or region in which it made its appearance, just as people to-day are fleeing from the Chinese territory, which the new plague is ravaging. The belief that the "black death" was an air borne disease prevailed to such an extent that those stricken with the disease often were left to perish from lack of attendance. So fatal was the "black death" that it is estimated one-fourth of the 100,000,000 population of Europe at the time, or about 25,000,000 persons, became its victims.

Symptoms of the pneumonic type of the disease usually are declared in from three to five days; and without the previous exhibition of Haffkin's serum recovery usually is rare.

Although this type is really less virulent than the bubonic type, yet owing to the virtual absence of technical knowledge of preventive measures and the impossibility of segregation, the epidemic at present in China is almost bound to spread and assume somewhat the proportions of the European black death, which also was pneumonic. Comparative immunity is solely due to superior hygiene. Dr. Kitasato reports that if the disease were introduced into Japan he could stamp it out in one month, thanks to the nation's perfected system.

Sanitary Milk Pails: There are a great many different styles of sanitary pails used in the production of certified milk, any of which are an improvement over the old open pail which has no provision for keeping out dirt and which should not be used in any dairy.

Generally speaking the sanitary pails have a small opening. Some are provided with a strainer, through which the milk passes in entering the pail. This strainer consists in some cases of metal wire, but it is not so satisfactory as a cheese cloth strainer.

Aside from the strainer used in the pails absorbent cotton is generally preferred.

This is usually inclosed between two thicknesses of cheese cloth, a method found to be very practical.

The pail shown on the left in the illustration is a good, sanitary milk pail. The

height is convenient and as the opening is on the side, there is but little chance for dirt to fall in. The seams are all well flushed out with solder. The objection to this pail, if any, is the difficulty of seeing that all parts are clean.

The right hand pail shows a cup attached for holding the foremilk. There is the same objection to this as the other presents —that is the difficulty of seeing into it to make sure all parts of the interior are clean.

All pails and utensils with which milk comes in contact should be thoroughly washed, rinsed, and steamed or sterilized.

St. Petersburg Water Supply: The largest "water factory," as it has been named, in the world, is now supplying water to the St. Petersburg mains. It takes in Neva water, allows it to stand in tanks, whence it passes through filters, and finally through an apparatus that charges it with ozone, which is claimed to destroy all kinds of pernicious microbes; the purified water is then run into the mains. The installation is the work of a German firm. The electric energy required for the "ozonizing apparatus" is 9,000 volts, and the total cost of the undertaking to the city about $650,000.

Whether Disinfectants Disinfect: How to tell whether "disinfectants" will disinfect, is the question that is taken up by the Journal of Infectious Diseases in its current issue, the initial statement being: "There is no question but that great fraud is practised in the exploitation of many of the so-called disinfectants that are offered for sale upon the market and are constantly being used by the credulous public." In a general way it would seem as if some of the articles so advertised bear the same relation to disease germs that the traditional cardamom seed bears to intoxication, the suppression of a minor symptom to the neglect of the major difficulty. The popular idea is to a large extent that the article is doing its work in the war against disease. In the Journal, two articles of two different kinds attack the question of the standardization of disinfectants. One of these, that of Professor Earle B. Phelps, of the Massachusetts Institute of Technology, seeks to establish the quality of the disinfectant by making use of certain laws of physical chemistry; the other by Dr. John G. Anderson and Dr. Thomas B. McClintic, both of the United States Public Health and Marine Hospital Service, seeks to improve existing methods and make them of greater practical use. The first-named paper is theoretical to the present moment, and while based on experiment, requires, still, experimentation in the future to produce results; the second one takes directly certain compounds and seeks to give them their proper place in the scale of efficiency.

The need of a definite standard for disinfectants whereby they can be compared one with another has long been apparent and a step towards the solution of the problem was taken in 1903 by Rideal and Walker, who suggested a way of getting the ratio in strength between the substance to be tested and carbolic acid, or, technically, phenol. Another method has been devised by the London Lancet. A number of elements, the culture media, the organism to be employed in the tests, the temperature and the technique are all of them points of uncertainty, which Dr. Anderson and his fellow worker in the Marine Hospital Service have tried to reduce to put on a standard basis. The authors have worked at a standard temperature of 20 degrees Centigrade and have developed a "Hygienic Laboratory technique" for the determination of the "phenol coefficient," the result of which will be to determine the comparative cost per unit of efficiency of any compound subjected to the tests. As a part of the investigation the authors state that they are now engaged in a study of the various proprietary disinfectants to be found upon the market, and they propose to determine, in this study, the phenol coefficient with and without organic matter and the comparative cost per unit efficiency of each.

Open Mail

To the Editor: The Public Health Journal:

Plasma de Quinton.

Sir,—A few words about the "Plasma de Quinton" injection treatment may be of interest to those of my fellow readers of THE PUBLIC HEALTH JOURNAL who have not had an opportunity, personally, to investigate the matter. The test in London of this method of treatment (chiefly of infantile diseases so far), is particularly welcomed by those interested in checking infantile mortality, and very remarkable results are claimed for its use in France. "Le Plasma de Quinton" is nothing more nor less than pure sea water, sufficiently diluted with distilled fresh water as to make it isotonic with the human blood. The sea water is taken from the ocean at a point far away from land and at some feet below the surface. These precautions are necessary for safeguarding purity, for, according to the originators of the treatment, there must be none of the ordinary precautions to secure freedom from noxious germ life. The sea water, for example, must not be boiled, as that would destroy its value altogether. The fresh water used to dilute the sea water so as to make it of the same specific gravity as the human blood must be distilled, then frozen, then distilled through a Pasteur filter. The mixture must afterwards be used in a fresh state, as it loses its value when stale.

Science has come so close to the miraculous in some recent discoveries that the theory of "Plasma," though it reads like romance or the dream of an alchemist, may not for that reason be condemned as scientifically untrue. It is this: that biologically all life originated in the sea water; that pure sea water is almost absolutely identical with the organic plasmas. The water of the sea is, in short, the culture liquid for organic cells. It suggests the *elixir vitae* of our forefathers, and it is claimed for it that it will be a great remedial agent of the future. Inject this sea water, properly diluted, into the human organism and the result is to give an access of the vital principle. The human cells are bathed in a liquid which is their original food, and respond accordingly. That is the case in theory for teratment by "Le Plasma de Quinton." It surpasses in its appeal to the imagination any of the work of Koch, Pasteur, or Metchnikoff.

I was allowed recently to hear M. Quinton explain the treatment with Plasama as carried on in the Paris dispensaries. He dealt almost solely with the treatment of young children suffering from marasmus or "wasting disease," known also in this country under the name of infantile cholera. Cases were cited not only of the treatment of average children, some brought to the dispensaries in a moribund state, but also of children in whom the condition of disease was aggravated by a "bad heredity," *i.e.*, they had tuberculous or otherwise diseased parents, or were prematurely born. Medical details are necessarily indicated rather than fully set out in a translation of M. Quinton's statement.

The most important point, he stated, in the treatment was to determine the proper dose. In 60 per cent. of cases this was easy. In 40 per cent. of cases the proper dose had to be methodically sought for. Once the veritable dose was found success followed, if success were possible. In the experience of the Paris dispensaries in 1908-9 many cases died. In 1910, with bolder dosage, almost all were saved. In some cases 300 cubic centimètres were injected every day. That represented a weight of about 10 oz. English of the fluid.

In the serious marasmus cases such as those brought to the dispensary the ordinary mortality without the Plasma treatment was 98 per cent. In 1908-9 the system at the dispensary was to inject 30 cubic centimètres of Plasma every second day. A large proportion of cases were saved. Still the bad cases very often died. In 1909 a very violent case of infant cholera was brought to the dispensary. The injection (30 c.c.) was tried. The child died. Five following cases, all very serious cases were secured. But the conclusion seemed to be obvious that the treatment was a failure, or, at any rate, not reliable, in very bad cases. It was finally resolved to attempt larger

doses. Encouragement to this was given by success with a dog which had almost bled to death and was revived with an injection of 200 c.c. The first case to be treated with large doses had on the first day 30 c.c.; on the second day 50 c.c.; on the third day 50 c.c. in the morning and 100 c.c. in the evening. The child then had 300 c.c. each day for four days, and was finally cured. In 1910, in a series of cases, doses as high as 350 c.c. were administered daily, and success followed. In one particular case, one of profound constitutional degeneration for three months, the infant had a 200 c.c. injection each day and finally recovered.

There was another side to the story. In other sets of cases a small dose was found to be the correct one. Where 30 c.c. did harm 10 c.c. effected a cure. The physician had to find the dose by careful study of all the conditions.

It was insisted by M. Quinton that in the case of large doses it was not a matter of forcing great quantities of foreign matters into the system. The sea water contained the salts of the human organism, not foreign salts.

Such is the effect of M. Quinton's claim for the efficacy of these sea-water injections, of course, under proper medical supervision. It has been now for three years before various learned societies in Europe and is being exhaustively tested in Paris. Its trial in London will give the medical faculty there a chance of closely observing its action and results. If it proves its claims the value from a public health point of view will be very great. A huge amount of the wastage of child life in the great cities is due to forms of marasmus which seem to defy all medical treatment and to run their course in spite of all drugs and food precautions.

For the Plasma treatment success is also claimed in the treatment of tuberculosis, eczema, and neurasthenia. The idea is that it is efficacious because it adds directly to the vital force of the organism. Those claims it is not necessary to discuss here. The London experiment, following on that of Paris, will devote its main attention to the treatment of infantile marasmum.

A CORRESPONDENT.

Ventilation v. Draught.

Sir: Many physicians now, in view of the increased pneumonia mortality remind me of the story of the old doctor of the phlebotomist school, who, on hearing of the continued decline of the patient under continued bleedings, could only prescribe, "bleed him again." They are sounding again the note of warning against closed houses and conveyances. The colder the air, they seem to say, the wider we need to set open our doors and windows. This cry has been dinned into all of our ears ever since the beginning of the organized campaign against the white plague. The danger of it is that many ears are so long that they take in more of it than the physicians intend. There is nothing finer nor more healthful than brisk and bracing air taken in the open. Taken through a window, or an orifice of any kind, in any of the cribbed and confined ways of turning a breeze into a draught, it often serves all the purposes of a bullet. Experts must be aware of this fact. In all probability they are well enough aware of it to fail in understanding the unintelligent literalness with which their words have been taken.

It is remarkable how a very little of cold air can vitalize and purify anything. Healthy men who have lived in dugouts during a hard winter understand well that only the necessary opening of exits will keep the interior charged with sufficient oxygen for healthful breathing. Beyond that, they look to circulation in the open for the maintenance of health. When the body is in repose partial or complete, it should be kept warm. Cold draughts may be excellent things for tuberculous patients, but that they superinduce pneumonia can not be denied, and hardly less can it be denied that the alarming increase in deaths from pneumonia can be traced to them. Sanitarians owe it to the public to illustrate, to the last detail, the difference between ventilation and draughts. They should show sections of living and sleeping rooms to indicate the necessary positions of doors and windows in getting ventilation without draughts. And they should tell us about how many cubic feet of cold air per mile is needed for the proper ventilation of a crowded street car.

NO DRAUGHT.

Progress in Shop Sanitation.

Sir: Not so many years ago all humanity was willing to drink out of the same cup and there was little thought of it. How

many diseases were perpetrated through countless generations by this practice there is no means of estimating. It has been recently only that men in their daily duties have hesitated to drink from the same cup as their friends, enemies, and neighbors. Physicians have been expatiating upon the wisdom of using any but your own drinking vessel, for a longer time, it is true, but it takes a long time for a medical theory to become a popular prejudice.

Even now there are many lands in which it would be the height of discourtesy to refuse to drink from a proffered cup already used by thousands of the healthy, the diseased, the rich, the poor, the halt, the lame, and the blind. Even in this country there are thousands of factories and shops where working men and women in all conditions of health and sickness drink from the same vessels, and certainly the majority escape untainted, but not a huge majority.

The system installed by the Reporter Press Company, of Chicago, is a notable digression from this rule and a most satisfactory one. Above the tank of filtered water are hung as many cups as there are employees in the particular room or department. In the case here shown there are thirty-three. These cups are numbered, and upon the printed list which is posted besides the cups is given the name and number of each drinker on the force. Assuming that every one drinks water, each man, by such an arrangement, may have the unique satisfaction continually of using his own cup and of knowing that if he is absorbing anybody's diseases they are his own.

There is a certain false courtesy to which men are addicted when they invariably protest that they do not mind drinking after their neighbor at the spigot. While it may be a compliment to the neighbor's physical condition, as a matter of courtesy it is so full of menace that one can afford to forego it and at least go through the formality of washing out the receptacle. R. G.

Improving the Farm Home.

Sir: Few things will contribute more to the comfort and "sanitation" of a home than an ample supply of running water. This is one of the substantial attractions of the city home. That it is found in comparatively few farmsteads is a reproach to the thrift of the owners, as well as to their characters as husbands and fathers.

A supply of running water is not only a household convenience, but it is a money-saver in numerous ways. In the mere matter of watering cattle, it will not only make a large saving of labor, but it will increase the flow of milk in dairy cattle and cause fattening beeves to lay on more flesh than when their drink is limited.

The economies it will effect on even a moderate-sized farmstead will amount to a good deal more each year than the interest on an investment of $500 and only rarely would the outlay for its installation amount to so large a sum as that. Forest Henry, in a recent article, figures that—a well being already available—the cost may be kept within $200; which includes a $100 windmill; 100 feet of 1¼ inch pipe, connecting with house and barn, and cost of laying same; the building of a cistern; a small stock-tank; float valves and sundries. The interest on $200 at 6 per cent. is only $12 a year. It is safe to say that any farmer, with an ordinary "bunch" of cattle, losses several times that amount, in butter or beef product alone, from the limitation of the amount of water which is inevitable where much labor is involved in watering the animals. All this without taking account of the conveniences, the improved healthfulness, and the saving of labor in the house, which accompany the introduction of running water.

The farmer should realize that it pays better to put profits into farm improvements of his own than to loan it at 5 per cent. or 6 per cent. to improve some other man's farm.

The question with farmers should not be whether they can afford an equipment for running water, but whether they can afford to go without it. Those who have installed such an equipment are usually prompt in answering this question with an emphatic negative. C. R. B.

Meetings and Reports

International Housing Congress.

At Vienna, at the Ninth International Housing Congress, the single house set in its own garden was dwelt upon as the goal toward which all city housing reformers were striving. There 1,400 delegates, representing all the countries of Europe, unanimously concurred in regarding this as the only real solution of the problem.

However, it is one thing to talk about country life, the joys of which most of us know full well, and quite another to find oneself during a long weary hour or two jammed into an already bursting train, only to be forced out long before daybreak to repeat the torture back into town again. Much depends on this question of transit. Every device capable of moving crowds back and forth easily and cheaply should be investigated. A plan should be made which would take the probable growth of the city far into the future

Main radial lines for traffic should be determined. Circumferential lines connecting the outlying points should be provided for. Sites for public buildings, parks, squares, and playgrounds should be laid out. And as cities extend up to these points care should be taken to see that property owners conform to the plans. It is most interesting to see what England is doing along this line under her new Town Planning Act, what Germany is doing in many of her towns, and how France is even contemplating making town extension planning compulsory.

It is useless to talk to manufacturers about the increased efficiency of labor in the country. The chief way he can be reached is through his pocketbook. He can be reached on that side in one most important way, and that is through cheaper and better transportation and storage facilities.

Sex Hygiene.

In a recent lecture before the Society of Sex Hygiene in Detroit, Dr. Winfield Scott Hall, professor of physiology in Northwestern University, said among other things:

"The man who is going to battle with and overcome the problems of the twentieth century, needs every ounce of vital force that nature intended him to have. The 'mollycoddle' who persists in a defiance of the laws of hygiene, may make a fair record in school and college—but when he goes out into the world and confronts the great crisis of his life—a crisis that calls for great physical endurance—his tottering edifice of manhood crumbles into ruin."

In the course of his address, Dr. Hall applied the big stick to the "advertising quacks," as he called them. He told of a young man who came to him in Chicago, after doctoring for three months with one of these quacks who, by giving exaggerated importance to certain symptoms, had convinced the young man that he was really "in the last stages of decay."

"He had been paying this quack $75 a month, all the money that he could earn, beg or borrow, when I discovered that the trouble was all occasioned by a simple disorder of the eyes, which was corrected with a pair of glasses, costing the young man $4.50," said Dr. Hall. "He had already paid the quack $150

"Do these quacks ever show themselves in a medical convention?" shouted Dr Hall. "Well, I should say not! Do they have any standing in the profession? Well, I should say not! I tell you men, if you get worried go to your old family physician. If you haven't one go to somebody else's family physician, but give these quacks a wide berth."

Dr. Hall pictured the awful doom that husbands sometimes bring upon innocent wives through evil associations.

"We must come to the point where there shall be but one standard of purity," said the speaker impressively. "We demand purity in our wives; shall we not exhibit it in our own selves?

Public Health Administration rests upon a wide range of sciences, almost all of which are in a progressive Stage.

Whitegge and Newman.

CHARLES H. RUST

President of the Canadian Society of Civil Engineers, 1911, who protests against the exclusively medical complexion of certain Boards of Health. —*See Page 134.*

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Special Articles

EVOLUTION OF LOCAL PUBLIC HEALTH: COUNTY OFFICERS

By P. H. BRYCE, M.A., M.D.

The study of the evolution of local self-government, whether in England or in Canada, forms one of the most attractive fields of study, whether in the field of legislation or sociology. How it developed rapidly in England in the decades succeeding the first Reform Bill of 1832, and how Lord Durham's report in 1839, as worked out by Lord Sydenham, in 1841, became the foundation of our splendid system in Canada, are now matters of history. As has been pointed out in a previous article in the PUBLIC HEALTH JOURNAL, the evolution of public health in Canada, as in other countries, had in the pre-scientific period of modern medicine, to depend upon the occurrence of some epidemic, during which spasmodic, and often temporary, progress was made, whether in legislation or in the enforcement of health regulations.

In this Canada has not been different from other countries; but it may not be without interest to point out to the readers of the JOURNAL how existing legislation in Ontario has been brought about. A provision existed in the statutes of Upper and Lower Canada for the establishment of a central Board of Health, by Order-in-Council; but this provision was repealed when the Provincial Board of Health was established under the Act of 1882. Its duties were to educate the public and advise municipal authorities on matters of health; while the latter were supposed to have a health committee of the municipal council, engaged in carrying out the laws regarding nuisances, etc, found in the Municipal Act. After two years' serious effort, the Provincial Board of Health had to report at the end of 1883 that there were but 50 local Boards of Health in 40 counties, and that there were 12 counties with no boards; that there were in all Ontario but four medical health officers, and but two sanitary inspectors (one of whom was paid).

As executive officer of the Provincial Board, I felt that unless some compulsory law were passed requiring municipal councils to appoint Local Boards, progress in local health work would be practically impossible.

Hence, an appointment was arranged

with Sir Oliver Mowat, then Premier, to discuss the situation, and I well recall that the late Dr. F. Rae, a member of the Provinvial Board, and an old experienced municipal politician, at the time Mayor of Ottawa, was delegated with myself to discuss the matter. After presenting the facts and figures to Mr. Mowat, we waited for his reply. In that careful manner so peculiar to him, he said: "Well, gentlemen, it appears to me that there are two points to consider: 1st, Is there a necessity for such legislation; and, 2nd, Are the people prepared for it? After fuller discussion he instructed us to have the Board prepare a Public Health Act and he would consider it. The whole winter was spent by the committee on legislation, Dr. William Oldright, then Professor of Hygiene, being chairman of the Board and most active in preparing the legislation. The Consolidated Public Health Act of England and Wales of 1875 was our model, and it is this which has become the basis of all legislation in Canada. The Act was passed, and I find in the Annual Report of the next year that although the Act went into force only on July 1st, 1884, there had been established within six months 400 Local Boards, or two-thirds of the total municipalities had Boards of Health. Of the 203 cities, towns and villages, 180 had Boards; while there were 184 Boards in 447 townships, and there were 107 medical officers appointed and 136 sanitary inspectors. These facts were the best proof that the people of Ontario were prepared for the forward step.

That the province was saved untold disaster may be judged from the following, which I find in my report to the Board in 1885: "Never since its organization has the Board seen the new year begin with a dawn so ominous of coming evil, and its rising sun so obscured with dark and gloomy clouds as did 1885." "America had escaped cholera in 1884, but its European progress had caused all the people of the American continent to dread the advent of 1885, with its hot season which must certainly come; while in our own province an outbreak of smallpox which at that time had spread over one township and had extended into several neighboring ones, was being fought with no certain knowledge as to how far its ravages might extend before the disease could be arrested." "With marked success the local organizations, encouraged and directed by their Board in these townships of Hastings, Addington and Northumberland, were completed and outbreak after outbreak, which early had spread from the Hungerford centre, was quickly stamped out."

In the Act of 1884 the powers of the Provincial Board as regards enforcing local health regulations were purely advisory; and it was the advantage taken of what had occurred in the epidemic referred to on the quotation that enabled the Board to have the Act amended; providing that whenever contagious disease existed in a municipality the Board had not only to investigate and advise with Local Boards, but had to see that the measures suggested for stamping out disease were carried out by the Local Board, and, if not, then the Provincial Board was empowered to carry them out at the expense of the municipality. The chairman's report in November, 1885, states "that there were in Ontario 563 organized Local Boards, 283 medical health officials, and 160 sanitary inspectors. These assisted by the work of the Provincial Board of Health, which had had a staff of eight medical officers for several months examining every passenger who took train or boat for Ontario out of Montreal, resulted in the year 1885 closing, with the secretary being able to report to the Provincial Board that only 21 deaths had occurred in Ontario during the year, and that these were confined to 7 counties. It will be remembered that over 3,000 deaths had occurred in Montreal, and probably as many more throughout the Province of Quebec during 1885. The lesson had been learned, and until 1900-1901, when the type of smallpox had changed, Local Boards in Ontario were always found ready to act promptly in outbreaks of smallpox and the other more fatal contagious diseases.

But it had early been found with the annual appointment of ratepayers to the Board of Health by the municipal council, that anything like the progressive work of school boards became impossible, because the appointments were annual and the Local Board had no power under the statute to levy any assessments for its work, it being, except when an epidemic occurred, wholly at the option of the council as to whether the Board of Health had any money to work with or not.

In 1891 the Act was changed, providing

for the members of the Local Board being appointed for three years, one-third retiring annually. This, perhaps, assisted somewhat; but so long as the Local Board had no power to definitely levy an assessment for its own work, just so long its members, who came to be mostly a committee of the municipal council, failed to develop any new lines of health work for lack of funds, and it was only in the larger cities that annual grants were placed in the estimates for public health purposes. The remedy became apparent, and in different years at the annual meetings of the executive health officers of Ontario, the necessity for enlarging the unit of Local Health organizations in Ontario, as had been done for the public schools by Dr. Egerton Ryerson, from township inspectors to county inspectors, was debated and generally coincided in. Along what lines this proposal was worked out will be dealt with again.

TRANSMISSION OF PLAGUE

By L. W. SAMBON, M.D., F.Z.S.

Long immunity has made us forget the horrors of the "black death," and Defoe's "Journal of the Plague" is to-day read with no more concern than his "Robinson Crusoe." But it should not be forgotten that long periods of quiescence are not by any means a new feature in the history of the disease. For instance, Bombay, after nearly two centuries of immunity, was attacked by plague in epidemic form in September, 1896.

Another cause of public indifference is the erroneous notion that, owing to modern sanitation, we are no longer susceptible to plague. That sanitation has improved in recent times is shown by the greater general healthiness as compared with the conditions obtaining two or three centuries ago, but so-called "ordinary sanitation" is of no greater protection against plague than against other insect-borne diseases such as malaria, yellow fever, relapsing fever, typhus fever, or filariasis. The vehicles of the plague germ are not sewage nor drinking water, but rats and fleas; wherever rats and fleas are to be found, there the conditions necessary for a plague epidemic exist. Indeed, within recent years plague outbreaks have occurred at Oporto, Glasgow, Naples, Cape Town, Sydney, San Francisco, Buenos Ayres, East Anglia and other places, some of which may well boast of their systems of sanitation, systems, nevertheless, inferior to those of Imperial Rome; yet Rome was desolated by a fearful epidemic of plague in the year 291 B.C.

Recent investigation concerning the epidemiology of plague has shown that in order to prevent the introduction of the disease into any previously immune place we must prevent the introduction of plague-infected rats.

The fact that rats are the main carriers of plague from place to place, though only recently established by the modern sanitarian, was well known to the ancients. Of this we have irrefutable proof. I need but mention the golden images of plague buboes and rats which the plague-afflicted Philistines presented as a trespass offering in returning the Ark, and the colonial coin of Lucius Verus struck at Pergamum at the time of a plague epidemic. On this medallian Æsculapius, god of medicine, is represented with a rat at his feet. He takes the place and attributes of a local deity—Apollo Smintheus, the destroyer of rats, "whose arrows spread the plague."

Both archæologists and zoologists have long entertained the belief that rats were unknown in Europe during the classic period, that the black rat *(Mus rattus)* was first introduced into Europe in the early Middle Ages, and that the brown rat *(Mus norvegicus* v. *decumanus)* did not arrive until the 18th century). With regard to the brown rat, we know that large hordes crossed the Volga in 1727, but this fact does not prove that the brown rat first migrated to Europe at that date. Indeed, Ælian, in his "De Natura Animalium," probably refers to this species when he relates that the "Caspian rat" at times migrates in numberless swarms and fearlessly swims across rivers, whilst holding on by

its teeth to the tail of the rat in front. However, although I do not think we can assign any date to the first advent of the brown rat into Europe, yet there seems to be sufficient evidence to prove that, in several parts of Europe, it did not establish itself and oust the older occupant until within the last two or three hundred years. The black rat, on the other hand, must have been in Europe from the remotest antiquity of which we have any record. The innumerable figures of rats on Etruscan, Greek, and Roman monuments have invariably been interpreted as representations of the smaller murid, the mouse, or *Mus domesticus minor*; but by a study of the actions in which they are represented, such as feeding on the sea-mussel *(Mytilus edulis)*, as seen on the coins of Cumæ, I have been able to show that, in many instances, rats, and not mice, are portrayed. Moreover, now that we know that rats are the necessary carriers of plague, it follows that rats must have existed in Europe at least three centuries before our era, since Rome was attacked by the plague at that time.

Considering that the black rat is the chief source of plague in India, China, Persia and Africa, at the present day, and that until comparatively recent times it was the only, or at any rate the one most prevalent, species in Europe, this rodent may reasonably be looked upon as the true plague rat. It is true that both the black rat and the brown rat are equally susceptible to plague, but on account of differences in their habits it is the black rat which comes more closely in contact with man and therefore is the more dangerous. Whilst the brown rat is practically confined to drains, sewers, cellars, and stables, the black rat lives chiefly in the ceilings, upfloors, and wainscots of houses. It is possibly for this reason, and not on account of lesser susceptibility, that the ousting of the black rat by the more powerful brown rat may have reduced our liability to those fearful epidemics which desolated Europe during the Middle Ages.

The pneumonic form of plague may occur in any country and in any outbreak. In the recent outbreak on the West African coast about fifty per cent. of cases were of the pneumonic type. In Sydney, this form was not encountered until the sixth outbreak in 1906. The four recent Freston, England, cases were all pneumonic. They probably contracted the disease from the same source, because pneumonic plague generally reproduces the same form. According to Professor Simpson the history of most pneumonic cases is that the persons attacked have been dealing with infected animals and the disease has most probably been contracted from the animals. The first Freston case was that of a little girl of nine who contracted the disease from a cat which she was in the habit of fondling. The cat died the very same day the child was taken ill.

However valuable cats and dogs may be in keeping down the rat population during ordinary times, when plague breaks out they become, for this very reason, exceedingly dangerous to man. That cats do contract the plague there is no doubt whatever. In India this was noted in Bombay, Karachi, Bandra, and in particular at Ahmednagar, which was overrun with cats having open buboes in their necks. Dr. Hunter records an outbreak of plague among cats in a warehouse in Kowloon, Hong Kong, in which rats had been previously dying of the disease. Dr. Ashburton Thompson saw spontaneous plague in cats in Sydney. In the South African epidemics at Port Elizabeth, East London, and King William's Town, numbers of cats were proved to be suffering from plague. Professor Simpson in his admirable treatise on plague (1905) mentions an interesting case of direct infection, communicated by the cat, which occurred in the Cape Town outbreak of 1901. The Rev. Mr. Gressley, who took up his residence in the Health Camp and voluntarily performed the duties of chaplain, was attacked with plague under the following circumstances: A cat of his became sick and after a few days died; examination proved its illness and death to be due to plague. One peculiarity of the bacillus, however, was its staining with Gram's method. A few days afterwards Mr. Gressley was attacked with plague, his infection being attributed to the cat. Curiously enough the bacillus in Mr. Gressley's bubo also possessed the character of staining with Gram's method.

Dogs are less susceptible than cats, but the danger lies not only in the fact that dogs and cats may contract the disease, but that even without falling sick themselves they may convey infected fleas from rats, other lower animals, or man. The famous Jesuit, Athanasius Kircher, who examined the blood and pus of plague patients under

the low-power microscope of his day to look for an animate causative agent of the disease, writing in 1658, says:

"Cats, dogs, pigeons, fowls, and the like dwelling within the precincts of an infected house, at the very first contact with the things infected take the contagiousness which breeds contagion; and even if, by a kind of contrariety of nature, they are not affected internally by it, they nevertheless do carry it into the neighboring houses and spread the plague they have caught throughout the city. Therefore, in time of plague the slaying and extermination of dogs and cats and suchlike domestic animals is prescribed. Examples beyond all count show how great is the danger from such animals when a house is stricken by plague."

The reality and gravity of this danger was so fully recognized in bygone days that from the remotest antiquity, both in the Levant and in Europe, on the outbreak of plague all cats and dogs were either shut up in cages or destroyed. In Palermo in the year 1576 upwards of 20,000 dogs were killed and buried within two days, and all cats, dogs, fowls, and pigeons were destroyed, not only in the town, but for a radius of four miles all round it. A like extermination of cats and dogs was enforced by the magistrates in Padua during the epidemic of 1630, and in Turin the year after. The Turin edict orders that, "having killed all cats, dogs, fowls, and pigeons, arsenic be prepared for the rats." In the same year, in Bologna, Cardinal Spada issued the following order:

"Seeing that dogs and cats easily contract the prevailing sickness and may infect persons and houses, His Eminence orders that these animals be either killed or placed under confinement, and he gives permission to any one to kill other people's dogs and cats found wandering about the town or entering other people's houses, and for every dog killed in the streets, provided the animal belong to others, the killer shall receive three *scudi*, the reward to be paid by the owner of the dog."

Also in England, on the outbreak of plague cats and dogs were destroyed. In the London epidemic of 1543 the plague order enjoins:—

"That all persons having any dogs in their house other than hounds, spaniels, or mastiffs necessary for the custody or safe keeping of their houses, should forthwith convey them out of the city or cause them to be killed and carried out of the city and burned at the common lay-stall, and that such as kept hounds, spaniels, or mastiffs should not suffer them to go abroad, but closely confine them."

Again, in 1665, we read in Hodge's "Loimologia":—

"That all occasion of propagating the Pest might be cut off; the Magistrates did not unadvisedly command Dogs, Cats, and likewise Pigeons, to be killed; Least, perchance, these animals wandering here and there, in all places, and birds flying about on all sides, should carry with them the pestilential seed, and become Conveyors of the Contagion."

At the present day the almost universal belief is that plague is conveyed by rat fleas from rat to man, and that, with the exception of the highly-contagious pneumonic cases, man plays no part in the spread of the disease. Basing myself on the history of numerous epidemics, on well-ascertained facts in the epidemiology of plague, and on analogies supplied by other diseases with a similarly wide zoological distribution such as tuberculosis, diphtheritis, smallpox and pneumonia, I hold that in epidemic plague transmission, from man to man is probably more frequent than transmission from rat to man.

We know that plague may prevail for months and even years among rats and other animals without extending to man, or only giving rise to a few sporadic cases; we have an example of it in Suffolk, England. But we also know that, given favorable conditions, such as suitable temperature and moisture, great overcrowding, and an abundance of fleas, a true epidemic may suddenly develop. Then, I believe, new factors come into play: the rat-strain of *Bacillus pestis* is replaced, in many cases, by a human strain, and the rat fleas are replaced by the fleas of man *(Pulex irritans)* and by those of the cat *(Ctenocephalus felis)* and dog *(Ctenocephalus canis)*, which attack man almost as frequently as the true human flea, so called. Indeed, in certain countries, as in Canada and the United States, for instance, the dog and cat fleas are the common fleas which infest houses, *Pulex irritans* being very rare. That these fleas are capable of inoculating the plague germ we already know from actual experiment.

Simond, who brilliantly exposed the part

played by fleas in the dissemination of the infection, based his theory firmly on epidemiological, clinical and experimental facts, but, owing to Professor Nuttall's negative experiments, and to the unqualified statement made by Galli Valerio and others that fleas from rats will not bite human beings, it did not at once receive the favor it deserved. Indeed, the Indian Plague Commission stated that "Simond's proposition that suctorial insects play an important part in the transmission of plague from sick to healthy animals is so weak as to be hardly deserving of consideration." Now, however, chiefly owing to the careful experiments of the Plague Commission of the Advisory Committee for Plague Investigation in India, the rat-flea theory of plague has been proved beyond every possible doubt.

The rat-flea theory of plague does not only explain the peculiar seasonal incidence of the disease, but also its greater prevalence among the poor, the sudden loss of contagiousness at the end of the epidemic period, and every other epidemiological feature.

An important fact to which I must draw particular attention is the remarkable impunity with which a plague-infected rat may be handled as soon as deprived of its fleas. Laboratory experience has shown that plague rats are practically harmless, provided their juices are not inoculated into those who dissect them.

The role of the flea is paramount in plague epidemics, as it is in plague epizootics. Therefore our preventive measures should be directed not only against rats, but also against fleas. The most efficient prophylactic measures employed by the ancients against the plague were those which affected more or less directly these insects. In a pamphlet on the plague published in Rome in 1743 we read that "in time of plague we should not suffer in our houses the slightest dirt, but keep them scrupulously clean on account of the grave danger that insects born of filth bring with them."

Every effort should be made to abolish fleas not only because of their great danger in time of plague, but because they may play an important part in the transmission of many of our more common diseases, not excluding tuberculosis in that form known by the name of scrofula, which is limited to the neck glands, and is so fearfully prevalent amongst the children of all poor districts.

On several occasions I have endeavored to draw attention to the part played by blood-sucking insects and other body—or household—vermin in the transmission of such diseases as measles, smallpox, typhus fever, scarlet fever, and mumps, our knowledge of which is far less complete than could be desired. With regard to one of these — typhus fever — several years ago I pointed out that its epidemiology showed unmistakably that it must be an insect-borne disease. My contention is now strongly supported by the discovery that Rocky Mountain fever, a form of typhus fever peculiar to the Western United States, is transmitted by a tick, and that in Africa a tick also is the carrier of the local form of relapsing fever, a disease which in Europe frequently co-exists with typhus fever, and is no doubt propagated by the same vermin—the body louse and the bedbug.

The wonderful progress made within recent years in our knowledge of tropical diseases is based principally on the discovery that the causative agents of most of these diseases are spread by blood-sucking arthropods, that convey them from the sick to the healthy just as pollen is conveyed from flower to flower by pollinating insects. It was Manson who laid the foundations of modern scientific prophylaxis by discovering the exact role played by the mosquito in fostering and disseminating filariasis, a round-worm disease very widely distributed throughout tropical and subtropical countries.

The discovery of the role played by the mosquito in the transmission of filariasis led to the discovery of the agency of mosquitoes and other blood-sucking arthropods in propagating malaria, yellow fever, sleeping sickness, and other tropical diseases. It also led to the employment of far more efficient preventive measures directed against the disease carriers.

It is remarkable that, whilst so much progress has been achieved in the comparatively new field of tropical pathology, little or nothing has been attempted towards the elucidation of the many grave infectious diseases which decimate our own populations. Three years ago, whilst endeavoring to gain some information on the epidemiology of diphtheria, I turned to the reports of the British Local Government

Board, but I was greatly disappointed. With the exception of one or two, these reports were based upon the faulty-drain theory, which must now be regarded as exploded.

Although it is only within the last few years that we have begun to adopt measures directed against animal disease-carriers, it is of the utmost interest to find that this method of prophylaxis was practised long ago by the ancients. The consecration of the cat, the hawk, and the snake amongst the ancient Egyptians was obviously a means of protecting the natural enemies of the plague-conveying rat. Even a beetle, the dung-beetle (*Scaraboeus sacer*), was consecrated because by rolling dung into pellets almost as soon as dropped, and burying it in the soil together with its dung-eating larva, this insect prevents the spread of the *aaa* disease, the grave endemic anæmia which the writer of the Papyrus Ebers 3,460 years ago rightly ascribed to the Heltu worm rediscovered in 1838 by Dubini, who named it *Agchylostoma duodenale*. And the ancient Egyptians, like the Hebrews and other Eastern people, protected themselves also against the malaria-inoculating anophelines by mosquito curtains, which the ancient Greeks and Romans borrowed from them and the latter called *canopeum*, from a Greek term which means mosquito. Juvenal informs us that the *conopeum* was a net of cotton with very close mesh, and from Horace we learn that it was used also by soldiers in the field. By means of the Romans the use of the mosquito-net became widely spread throughout Europe, and we still find it used in the England of Shakespeare's time, "the bedstead with a net for knattes" being mentioned in an inventory of the goods of the Abbey of Sawtre, taken in 1537.

A very interesting measure adopted by the ancient Romans to fight the plague was the introduction of rat-eating snakes. In the year 291 B.C. Rome was devastated by the plague. The Sibylline books were consulted, and it was decided to despatch ten ambassadors to Epidaurus to confer with the Æsculapian priests. Valerius Maximus tells us how the tribune Quintus Ogulnius, chief of the embassy, returned with the snake sacred to the god of healing, and how a temple to Æsculapius was subsequently erected on the Tiberine Island. A beautiful medallion of Antonius commemorates this event. A galley is represented passing beneath a bridge, and from its prow a snake moves towards the figure of the Tiber-god, who stretches out his right hand in sign of welcome. This legend, I have no doubt, refers to the introduction of rat-snakes in Rome for the purpose of destroying rats and thus stamping out the plague. In fact, Pliny clearly states that "the Æsculapian serpent was imported in Rome from Epidauros; it was kept in the public edifices, and also in private houses"; and we know from Ælian and other authors that the Egyptians kept domestic snakes in their houses and looked upon them as tutelar gods. Indeed, from the remotest antiquity, throughout the East, snakes were kept in houses for the purpose of destroying rats and preventing rat-conveyed diseases. Certainly non-venomous rat-snakes are a far better protection against plague than cats or dogs, because they are not likely to harbor fleas. For years I have thought that the guardian snakes painted on the walls of Roman houses might be a vestige of the long-forgotten introduction of rat-snakes to save Rome from the plague. Only a short time ago, in looking through Dyer's book on Pompeii, published in 1871, I came across the figure of a painting found in a baker's shop of the Via Consularis. In this *fresco* are represented the two guardian serpents, moving, as usual, towards an altar placed between them, on which is placed the incense-yielding pine cone sacred to Æsculapius, but above each snake is a bird darting after a fly. The tail, considerably shorter than the wing, the peculiar marking, and the very action in which they are represented of hawking flies on the wing, show that these birds are the common spotted flycatcher. The association of the snake with the flycatcher, a bird even at the present day kept in the houses of Southern Italy for the purpose of destroying flies, proves beyond doubt that also the tutelar reptile is here depicted as an emblem of a house-pest destroying animal. The information just given explains, I believe, in a satisfactory manner why Æsculapius was represented leaning on a snake-entwined staff. The snake and the pine cone were the emblems of man's conquest over the most formidable of disease scourges.

I have little faith in the success of a general crusade against the rat. Experience has shown again and again that rat

extermination is practically impossible. It may have been otherwise at the time when, according to the distinguished Spanish canonist Azpilcueta of Navarre, rats exorcised and ordered to depart for foreign countries would obediently march down in large bodies to the sea-coast, and thence set off swimming in search of desert islands where they could live and enjoy themselves without annoyance to man. Unfortunately, the days are over when rats could be exorcised or rhymed to death. In India there are now as many rats as ever, notwithstanding the enormous destruction carried out since the plague broke out. No better results were obtained in Japan. The slaughter only renders conditions more favorable for the multiplication of the survivors. The high death-rate is met by an increase in the birth-rate, and, as every one knows, the rat's powers of multiplication are incredible.

What we can do, and what we should do, is to render all wharves, quays, and buildings rat-proof. The rat must be entirely excluded from occupied buildings. He must be de-domesticated, if I may use the expression. Attracted by food and cover, he has imposed himself upon man as an effronted and most dangerous commensal. The proper storage of food, the immediate removal and burning of all food-wastes, garbage, or rubbish, the destruction of places in which he may find harborage, and the contrivance of architectural modifications apt to cut off his approach will certainly discourage him.

The modern sanitarian need not be unnecessarily sanguinary in his methods. Hygeia is no Moloch, and I do not hold with those who would exterminate the whole of the African fauna to stamp out sleeping sickness. Many a species has gradually died out without a struggle owing to changes in its environment. A change in the construction of roofs has banished from many a town the swifts which used to build their nests under the old projecting eaves. To choose an example from amongst disease-carrying species, I might point out that engineering changes in the large seaports of the Atlantic coast of the United States, by abolishing the breeding grounds of the Stegomyia mosquito, prevented those fearful epidemics of yellow fever which recurred so frequently in the latter part of the 18th century and the beginning of the 19th, long before any one suspected the mosquito of being the carrier of the deadly scourge.

What we need above all is knowledge, and, I would add, the judicious application of knowledge. With regard to plague invasion, we require, in the first place, an exact knowledge of the limits of the area over which the epizootic has extended, and we need a permanent rat-intelligence staff to closely follow its future course. Man, in the affected area, must also be closely watched, and physicians should be on the look-out particularly for cases of glandular enlargements, the so-called *peste noire*. Instructions concerning the disease, its symptoms, the way in which it is acquired, the means of prevention, should be widely distributed. Prompt and open denunciation must be insisted upon; it is the best policy in the interest of both the patient and the community. The patient suffering from ordinary bubonic plague is of no greater danger than a case of malaria or yellow fever, provided he be efficiently screened from fleas. Pneumonic cases need the most careful isolation.

Wherever plague-infected rats are found every effort should be made to destroy them forthwith.

I am not dictating rules for the prevention of plague. That would necessitate a very careful consideration of many other questions, such as the agency of house flies and other insects, mice, farm animals, contaminated objects, food, etc., on which I have not touched. I am only endeavoring to give a rough idea of the enormous amount of work of a highly difficult and supremely important nature which it behoves governments to carry out.

In closing, I wish once more to dwell upon the great importance of fleas. Without fleas plague rats and plague patients would be harmless. The flea is the all-important agent in the causation of plague outbreaks, and this knowledge, only recently acquired to science through the researches of Simond, Ogata, Loir, Zirolia, Lamb, Liston, and other noble workers who set their lives at naught to conquer the most formidable of disease scourges, has brought plague within the pale of prevention.

TUBERCULOSIS MORTALITY IN ONTARIO

By GEORGE D. PORTER, M.B.*

Although a report of the births, marriages and deaths published in our daily papers are read at the breakfast table for their personal interest, very few people ever think of wading through such returns when they embrace a whole county, province or a nation; for mortality tables do not make popular reading. A glance, however, at the accompanying chart will show how the death rate from tuberculosis—"of all diseases the most dangerous and fatal to the greatest number of mankind"—is declining in Ontario.

In the decade preceding 1899 the death rate from this disease was on the increase until in that year the figures amounted to 3,405 (a rate of 1.4 per 1,000 living estimated population, or, in other words, 11.8 per cent. of the total deaths.)

During that time there were no institutions for the tuberculous in the province; no dispensaries; no special visiting nurses; no educational agencies at work; no general information regarding the prevention of this disease. In 1899 there was only one institution; now there are twelve of them in the province and others projected, five dispensaries and an increasing number of visiting nurses while a general campaign of education is being constantly carried on. In 1908 the deaths from tuberculosis were 2,511 (a rate of 1.1 per 1,000, or 7.6 per cent. of the total deaths).

Is it not fair to assume then that this decline (a decline not shown in the total general death rate) is due in a large measure to the combined efforts already put forth? If not, why is the death rate in some of the other provinces where apathy prevails showing no improvement?

TUBERCULOSIS MORTALITY

Chart showing the Death Rate from Tuberculosis in Ontario for 10 years.

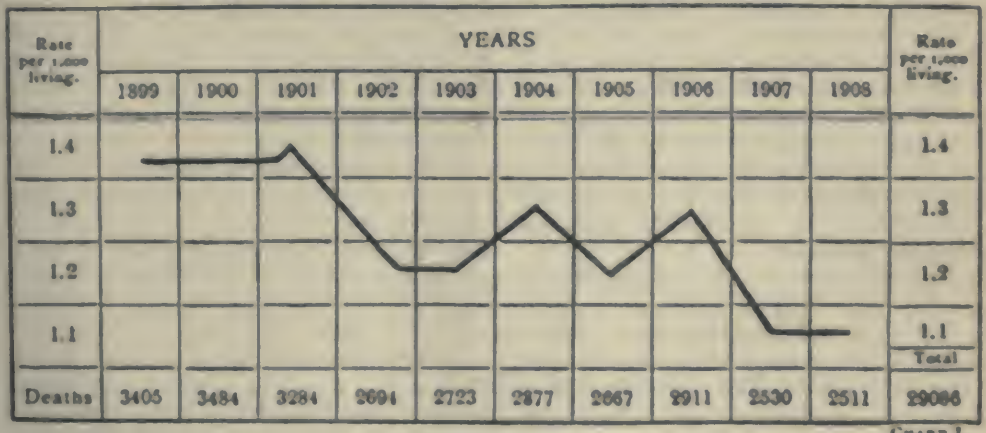

CHART I.

Assuming therefore (as they have done in other countries in regard to their vital statistics), that this decrease in the death rate from tuberculosis, which means a saving of life, money and much happiness, is due to such efforts, are we not justified in looking for a much greater decrease in the future if we provide more accommodation, especially for the advanced cases, and continue to enlighten the public regarding the methods of preventing this terribly widespread but controllable disease?

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HYGIENE IN THE HOME

By EMELYN LINCOLN COOLIDGE, M.D

Physicians of to-day are giving much thought to preventive medicine. We are all beginning to realize how true is the old saying, "An ounce of prevention is better than a pound of cure." In order to prevent illness we must know how to live correctly, day by day making the most of our opportunities and building up a strong body and mind to fight disease.

Water is one of our greatest blessings, and since its various uses are innumerable, we shall first consider its employment externally. This naturally leads us to the daily bath

The President of Bryn Mawr College said in one of her opening addresses to the students: "In our generation a great gulf is fixed that no democracy nor socialistic theories can bridge over, between men and women that take a bath every day and men and women that do not." She did not put this one bit too strongly; a daily bath of some kind is necessary to the health and self-respect of every one.

We are constituted very differently and the sort of bath that gives life and vigor to one person only causes another to feel languid and miserable; therefore, first find out the kind of bath that suits you best and then take it not once nor twice a week, but every day in the year.

Some people have the misguided theory that a bath more than once a week is weakening. This is an old-fashioned notion which originated in the days when stationery bath tubs were unknown. The right kind of a bath is not weakening, but decidedly strengthening.

Mothers often ask me when they may stop giving their babies a daily bath, and my reply is always the same, "Never."

If you have to let other things go take time somehow for a daily bath. If you are too rushed in the morning, then take it in the evening or whenever you can snatch a few minutes from a busy day.

The cold bath in the morning is the best for some people, but by no means for all; in fact, it is very harmful to many. If you do not feel in a warm glow and decidedly invigorated after a cold bath followed by a brisk rub with a coarse towel, then do not repeat the experiment, since it is demonstrated that you are not constituted so that you can stand this sort of treatment.

Sometimes a person can take a rapid cold sponge bath when a cold tub bath or even a cold shower bath at the end of a warm tub bath can not be borne. It is often a good plan to stand in a tub of warm water and very quickly sponge the upper part of the body with a wet cloth wrung out of cold water. Sponge one part at a time, dry it by a brisk rubbing, then go on to the next part The whole body can then be gone over thoroughly in a short space of time and without chilling a large surface. Before the lower extremities are bathed, some of the upper garments may be put on. This plan of procedure is often very successful with delicate, thin, nervous children and young girls and women who have not enough vitality to warm up the body surface after a cold plunge bath.

If one is so unfortunate as not to be able to bear cold water at all, then try the tepid bath, in the tub, if possible, and if not then use a wash-cloth dipped in tepid water (98 degrees-100 degrees F.).

It is usually wise to take the warm bath at bedtime, because it opens the pores of the skin more than the cold bath and it is not very safe to go directly out in the cold air in this condition. A warm bath at bedtime will often induce a quiet, restful sleep when all other means fail.

It is at this temperature (98 degrees-100 degrees F.) that I usually advise mothers to begin a new baby's tub bath, reducing the temperature of the water as the child grows more vigorous until it can stand a cold bath or at least a cold douche directly after the warm bath.

Tired school girls or those that go to business, often find this tepid bath at night wonderfully restful.

As for the hot bath (105 deg. F. or over), I think as a rule it is not very advisable, unless ordered by a physician for some special purpose. It is this kind of a bath without the cold douche, at the end, that is more apt to be "weakening" than any other kind.

Russian and Turkish baths each have

their uses, but they should not be overdone nor taken without some good reason. Those who take them "just for fun" and every day or two, in my experience, lose much more than they gain.

Various kinds of hot baths are often very helpful for rheumatic disorders; also for liver and kidney trouble, but like all other medicinal treatment they should be ordered by the attending doctor and suited for the exact individual needs of the patient.

Salt water baths are often very healthful as well as enjoyable, but there are some constitutions that cannot stand them. The best kind of a salt water bath is that taken in the ocean surf. The reaction from the massage given by the waves, combined with the stimulating properties of the salt water produces a delightful sensation given by nothing else. It is exceedingly foolish to remain in the water long enough to become chilled and blue, however. Go in quickly, get wet all over at once and stay in only while you are warm and comfortable; 15 or 20 minutes, half an hour at the most.

When it is impossible to get the salt water, some find sea salt dissolved in a tub bath at home helpful. This sort of a bath may be taken either cold or tepid. Babies under two years of age generally do better if the salt water is brought to the house and have the chill just taken off of it before they are put into the tub. Salt water baths often aid in curing some forms of skin trouble. Women and children who take cold very easily are often helped by a brisk salt water sponge bath of neck and chest every morning, if this is followed by a brisk rub. It acts as a mild stimulant and improves the circulation.

Every mother and daughter should know how to give a mustard bath. It is a valuable household remedy. For a heavy cold a mustard foot bath is still often used. One point should be kept in mind in giving all kinds of mustard baths, i.e., see that your mustard is well dissolved and is not floating around in the water in lumps. To insure this the mustard should first be mixed with a little cold water until a perfectly smooth paste is formed; this paste may then be thoroughly stirred into the tub or basin of water being 100 deg. to 105 deg. F. The proportions are one-half a teacupful to each gallon of water, the temperature of the water being 100 degrees-105 degrees F. The mustard foot bath should be given in a deep foot tub and a blanket should be wrapped around the legs of the person taking it, so that tub and all are covered. This should be continued until the skin on the feet and legs is quite red; they should then be well dried and wrapped in a warm blanket and the person put at once to bed.

A full bath in mustard water is often prescribed for convulsions in which the proportions of mustard and water are the same as that for the foot bath. The temperature of the water should be about 105 degrees F. The object of this bath is to bring the blood away from the brain and to the surface of the body; therefore, when the skin is red it is best to stop the bath, and wrap the patient in a towel and a warm blanket. While the mustard bath is being given, an ice cap or else cold cloths should be kept on the patient's head.

Tepid (98 degrees F.) sponge baths with one tablespoonful of alcohol to a small basin of water are very valuable for reducing fever and quieting a restless sick person. This method of treatment should always be tried before "fever medicines" are resorted to. We all know the value of baths in typhoid fever. Sometimes the simple sponge is enough; again tub bath is required.

On warm days a sponge bath with one tablespoonful of bicarbonate of soda to a basin of water 98 degrees F. is very cooling. It is especially valuable for cases of prickly heat and also for hives.

Another sort of bath which is frequently used is the bran bath. A cupful of bran is put into a cheese cloth bag and then squeezed about in the bath water until the latter looks quite "soapy." Cases of irritable skin, eczema, etc., are often treated with this bran bath, as in such troubles plain water or water with soap is badly borne.

A word as to soaps:

Strong soap with a lot of alkali should not be used in any sort of a bath. White Castile soap, or if one prefers, a kind that is very delicately scented, like one of the pure French soaps, may be used, and is really necessary to most people, but the soap should be well rinsed off the body at the close of the bath.

As for sponges, I can only say, do not employ them. They are simply a nest of germs. Use a washcloth, keeping two in constant use, one for the face and neck and another for the lower part of the body,

have them boiled, then hang out in the sun two or three times weekly. See also that the nail brush used in the bath is thoroughly rinsed, sometimes boiled and always aunned and aired every day. A good deal of waste skin and matter are thrown off during the bath and unless the toilet articles are carefully attended to they will soon be unfit for use.

Water is used externally in various other ways, both as hot and cold applications. For many forms of bladder and kidney troubles hot compresses of cloth wrung out of water as hot as can be borne are invaluable. Everyone knows how many are the uses of the household hot water bag. From baby with an attack of colic to grandma with a pain almost anywhere, the hot water bag is a comfort. Water is used cold for many kinds of sprains, bruises and inflammations. A cold compress around a sore throat is often a great relief. Very cold water on the nape of the neck will sometimes stop a nose-bleed or even help a headache.

THE PURIFICATION OF PUBLIC WATER SUPPLIES

By T. AIRD MURRAY, M.Can.Soc.C.E.

Professor Hyde, in a recent report upon a water supply for Sacramento, assumed that the question of quantity was of much more importance than the question of quality in the first instance. It is taken for granted that, no matter what the quality may be in the raw state, as long as the quantity is sufficient to meet all future wants, the eventual quality can be guaranteed by the adoption of purification methods.

Now this assumption as a basis for a report on a probable water supply has only been made possible of late years. Custom was at one time to insist upon an analysis of any probable water supply, and on the strength of that analysis to either accept or disregard it. This custom, however, is now subject to certain qualifications.

We know that no community can grow beyond its available pure water supply. Pure water is an absolute necessity to a community. If we have an island containing no potable water, no man can exist on that island. If there is only water for one man, then one man only can exist, and so on. No matter what latent wealth that island may contain, without potable water or the means of delivering potable water, that wealth is useless.

So in Canada, where we have great areas of land wealthy almost beyond measure in productive fertility, the realization of such wealth is subject to the supply of potable water. There are town sites on the prairie which can never become practically more than town sites, there are villages which cannot become towns, towns which cannot become cities, and cities which cannot grow beyond a limited population, because of the fixed quantity of available pure water.

At the present day the amount of available pure water is much greater than it was say ten years ago, because we now know of efficient means by which impurities, either inorganic or organic, can be removed from water, and so water which at one time would, on analysis, have remained condemned, may now be classed as potable. This is the meaning of Professor Hyde's assumption. We can now go straight for quantity, leaving the question of quality to be taken care of as an after thought. This does not mean that quality has no bearing on the choice in the first instance. It only means, as it did at Sacramento, that although a pure ground water supply existed in territory to the southeast of the

city, estimated at twenty million gallons per day, that Hyde advised the city to pump from a polluted river source with an unlimited supply which would meet the probable growth of the city. In fact, the original pure water supply would have limited the city growth, whereas the abundant originally impure supply, satisfied an unlimited city growth. A few years ago the growth of Sacramento was limited, by means of our newer knowledge of treating impure waters, its growth is now unlimited.

As to the modern requirements of a pure water supply, allow me to quote from Hyde's report above referred to:

(a) The supply must be abundant and unfailing.

(b) The water must be free from pathogenic germs.

(c) The water must be free from those allied organic forms which may not as yet be recognized as accompanying disease, but which may, nevertheless, not be conducive to health.

(d) The water must not be discolored.

(e) The water must at all times be free from taste and odors.

(f) The water must be uniformly clear and free from turbidity, both that which may be produced by suspended mineral matters, and also that which may be due to suspended organic impurities.

To the above may also be added that water should not contain more than 15 degrees of total hardness and 5 of permanent.

It is very difficult and rare to obtain water which meets all of the above requirements. Settled large basins of water present the nearest approach to the ideal. Almost all rivers, whether pathogenically polluted or otherwise, are apt to present turbidity at times. Spring waters, though free from turbidity and generally pathogenically pure, are apt to contain the salts peculiar to the strata in which they are found, and are hence generally excessively hard, and at times even unfit for domestic use unless artificially softened.

Filtration has been and remains the most generally accepted method of purifying water. We know that water in passing through the surface layers of the earth very quickly loses all trace of original organic impurities, and the only impurities it may contain must be new ones picked up by contact with the earth. It is, therefore, apparent that if we can artificially reproduce and improve upon the best conditions which exist in earth surface layers, we shall produce a method of water purification. That method had been evolved in the system called "Slow Sand Filtration." There is nothing of a mysterious nature, nothing of a complicated chemical character, takes place with slow sand filtration. The whole process simply amounts to a method of straining. There are certain engineering features connected with the regulation of the water as applied; but beyond these, the filter is simply a bed of sand of a given area and thickness capable of allowing a given quantity of water to percolate from the surface to the underdrains. The filters are subject to constant saturation and are worked with a depth of water covering the whole surface sufficient to overcome the friction produced by the sand. The quantity of water which can be dealt with daily varies from 1¾ million gallons to 6½ per acre, depending upon the quality and character of the raw water and the size of the sand grains used.

We have said that the whole process is simply one of straining. Thus it differs almost entirely from the sewage filter, the object of which is no only to strain or hold back, but also to bring about certain chemical changes in the filtrate. Sand filtration does its most important work on and in the surface layer to a depth of about one quarter of an inch. The sand pores are not sufficiently fine in themselves to effectually keep back bacteria. The first few days' working of a sand filter are practically useless as a means of removal of pathogenic impurities; but as a scum of matter, deposited from the water, forms a carpet over the whole surface, bacterial removal efficiency increases to almost 100 per cent. This scum formation is the peculiar feature which gives to slow sand filtration its unassailable position as the best mechanical method of removing pathogenity from water. Like all human contrivances, however, it has its drawbacks. Chief of these is that the surface scum continues to thicken until it becomes almost impervious and must be removed. Covered in sand filters average in cost on this continent from fifty to sixty thousand dollars an acre and to this must be added cost of pumps, pipe connections, and all the other necessary appurtenances. The cost of operation ranges considerable, from two dollars per million gallons at Mt. Vernon,

N.Y., to almost six dollars at Lawrence, Mass.

Slow sand filtration has been termed the English system of treating water, it has been adopted largely in Europe, and latterly in the United States, and is now being installed in connection with the water supply of the city of Toronto.

It may here be said that the introduction of water filtration has universally been followed by a marked reduction in the so-called water-borne diseases, especially in the typhoid rate. At Hamburg, the typhoid death rate averages 47 per 100,000 for the five years previous to the installation of filters, and only 7 for the five years following. At Zurich, before the introduction of filters the typhoid death rate was 69, and after filtration 10. At Lawrence, Mass., the figures were 113 and 25 under similar circumstances. At the present time over 30,000,000 people throughout the world are being supplied with filtered water, more than one-third of this number being in Great Britain. London, Liverpool, Birmingham, Leeds, Sheffield, Dublin, Leicester, Newcastle and Edinburgh are among some of the large cities in Great Britain using sand filters. In Europe, we have Hamburg, Berlin, Breslau, Magdenburg, Chemnitz, Altona, St. Petersburg, Warsaw and Antwerp where such filters have been in successful operation for many years. There are also similar plants at Calcutta, Bombay, Agra, Shanghai, Hong Kong, Tokyo, Yokohama, Osako and other cities. In the United States there are slow sand filters at Philadelphia, Pittsburg, Washington, Albany and many other places. In Canada there is one plant at Victoria, B.C. The typhoid death rate for Canada is 35 per 100,000, for European countries, 16.

Slow sand filtration is an effective method of purifying water. It is costly both in construction and operating expenses. It requires exact and careful management: this applies to all methods of water purification. A bacteriological laboratory should be run in connection with the plant. It is in every sense more suited to wealthy and large communities than to small.

There is another form of filtration more distinctly American, called "mechanical" or "rapid filtration." This system at once appeals to the layman because of the small space it occupies. Whereas slow sand filters will treat on the average 120 million gallons per day, rapid filters average 120 million gallons per day. The sand used is coarse grained, and efficiency in purification depends not so much upon the filter itself, as upon preliminary sedimentation accompanied by the use of a coagulant. The filters are generally installed in units equal to about a hundredth part of an acre. High purification efficiencies are obtained by technical care in regard to proper working and the scientific application of the coagulant. Generally speaking the bacterial removal efficiency is below that of slow sand filters. The makers, and there are many, do not as a rule guarantee a removal of more than 97 per cent. of total bacteria, whereas 99 per cent., and over, removals are looked for with slow sand filters. The temptation to use mechanical filters in this country is very great, as they can be installed easily in a building in connection with the pump plant and so guarded from severe frost.

With reference to the use of a coagulant I will quote from a report of the "Joint Special Committee to examine and report relative to the pollution of Water Supply, and the Best Method of Filtration," City Document No. 15 of the city of Providence, R.I., as follows:

"If the diameter of matter floating about in water is much less than that of the interstices between the grains of sand composing the filter bed, such matter, except as much as is caught upon the sharp edges of the quartz, will go right through the filter with the water."

Now, if a substance could be introduced, drop by drop, into the water before it comes to the filter bed, which would have the effect of curdling the matter altogether, so that every one hundred or so of the smaller particles were made to join together, and become one large particle, much as vapor or steam is condensed into drops, it would follow that they would be caught and held from going through the filter. This is accomplished by adding alumina (alum) to the water as it flows to the filter.

"The amount required is from almost none at all to about three-quarters of a grain, according to the state of the water, say, an average of from one-quarter to one-half grain per gallon in the ordinary condition of the Pawtucket river water."

"The action is the same as when coffee is cleaned by means of the white of an egg. No white of the egg goes to the drinker of the coffee—it is all drained off with the

grounds; and so no alum goes to the drinker of the water, it unites with the impurities in the water and settles in feathery flakes of insoluble hydrate on the top of the filter, and is washed out with its accumulation of impurities when the filter is cleaned."

"The analysis of the purified water shows no trace of the alumina used while the analysis of the wash water shows that the alumina is all washed out with other impurities. This feathery bed of precipitate flakes produced by the alum forms a filtering media of insoluble mineral matter which is well nigh perfect in its character. Bacteria are like the very fine particles of clay of some water, so small as to pass the sand or quartz, but they are caught by the feathery precipitate or alumina hydrate, much as the bacteria contained in air are prevented from entering a phial closed with sterilized wool."

So we see that, first, as in the case with the slow sand filter, so with the mechanical, bacterial removal efficiency does not so much depend upon the filtering material itself as upon an artificial surface or blanket being formed.

One of the most successful installations of mechanical filtration is that at Harrisburg, Pa. The average bacterial removal is above 99 per cent., being 99.62 per cent. for the year 1908.

Now the assertion may be made that these methods of filtering water are not perfect. Efficiencies are given of something over 99 per cent., but, what about the remaining bacteria, the percentage number of which remaining must depend upon the original number to start with.

For instance, there were days last year when the Harrisburg water presented as many as 85,250 bacteria colonies per C.C. Now, a 99 per cent. removal would yet leave over 800 bacteria per C.C. in the water.

The answer to the above assertion is contained in the one word "sterilization." If a water is so impure from a pathogenic point of view that it requires to be filtered and it is necessary to guarantee it at all times, then "disinfection" or "sterilization," as it is sometimes called, must form a final adjunct to any filtration process. This principal has been recognized for some time in Europe as illustrated by the number of ozone treatment plants which have been added to filtration plants. In many of the European rivers the bacterial counts run so high, that it is impossible to obtain by any method of filtration results which come anyway near the recognized standard for filtered water, viz.: not more than 100 bacteria per C.C.

The principle is also being recognized on this continent. Nashville, Minneapolis, Quincy, New Jersey, and many other towns, even including Harrisburg, have adopted methods of disinfecting the water. While in Canada we have several temporary plants installed, including Toronto, Montreal, Pembroke and several in Western Canada.

Disinfection by ozone has not yet found much favor on this continent, the disinfectant chiefly used being chlorine obtained from chloride of lime. With the Siemens, Halske & De Fries system, efficieint disinfecting results can be obtained with ozone. The process, however, of forcing contact between the ozone and the water is expensive, and even in some cases, as at St. Maur, Paris, costs more than the production of the gas. The difficulty arises owing to the fact that ozone is practically an insoluble gas in water, hence the difficulty of obtaining contact with every drop of water. In the case of chlorine in the form of hypochlorite we have a salt which is soluble in water, and which if properly mixed, reaches every particle of water. The well known disinfecting action of chlorine depends upon its power of combining with the hydrogen of water and liberating the oxygen; thus $CL_2+H_2O=HCL+O$.

This atom of oxygen is said to be nascent at the time of liberation and in this form acts as a most powerful disinfectant. The bleaching power of chloride of lime is due to the same reaction. As long as the lime is kept dry it has no bleaching action, but when in contact with moisture the reaction at once takes place.

The high disinfecting efficiencies obtained by mixing chlorine with water has, of late, brought it into great favor as a temporary expedient in cases of typhoid outbreaks due to impure water. The plant necessary for treatment can be fixed up, practically, in one day. The cost is a mere bagatelle, and the operating expenses run about 50 cents per 1,000,000 gallons of water treated.

The plant need not consist of any more elaborate detail than two or three 60-gal-

100 casks with a small tank supplied with a ball cock to maintain a constant head, fitted with a regulating tap at the orifice.

Hypochlorite is most economically and readily obtained from chloride of lime, the lime containing on the average about 33 per cent. of available chlorine. It is usual to mix in the barrels a one per cent. solution of the lime with water, viz., at the rate of one pound of chloride of lime to 100 pounds, or 10 gallons, of water. The lime settles out as calcium hydrate, and the liquid is led to the orifice tank from which it is dosed into the water supply in the necessary proportion.

The proportions of available chlorine to the amount of water requiring disinfection varies with the character of the water. Turbid water, and water containing considerable amounts of vegetable matter, require much more chlorine than waters which are practically free from these conditions. Lake Ontario water as normally represented by the quality at the city intake, is efficiently disinfected by the addition of .32 parts of available chlorine to 1,000,000 parts of water. Some waters require not more than .15, while others will practically eat up chlorine before it has any chance to act as a germicide. The reason for this variation is the affinity of organic matter to oxygen. No hard and fast rule can, therefore, be laid down for its application. Where a water may vary in condition, relative to turbidity and organic content, so the amount of chlorine must also be varied. The application is not dependent upon any hard and fast rule, but must be based upon a scientific knowledge of degrees of cause and effect.

A water which can be most efficiently treated with any disinfectant which relies upon nascent oxygen, should present constant conditions. If these constant conditions are not peculiar to a raw water, then they should be assured by some preliminary treatment before the disinfectant is applied. The preliminary treatment may take the form of sedimentation, slow sand filtration, mechanical filtration, or a combination of sedimentation and filtration, depending upon local conditions. This practically means that in the majority of cases disinfection is not likely to supercede the accepted general methods of purifying water, but that it will merely form an adjunct or final process, by which any water can be absolutely guaranteed as free from disease germs.

The introduction of disinfecting processes will probably in the future tend to a more favorable acceptance of rapid filter methods rather than slow methods. The main reason, as we have seen, for a preference for slow sand filtration as against mechanical filtration, has existed in the higher efficiency of the former as a germ remover. Our newer knowledge that water of a constant character, as turned out by a mechanical filter, can be sterilized at a small cost, has caused many of the advocates of slow sand filtration to reconsider their former conclusions.

The question has been asked, whether the addition of hypochlorite, deleteriously affects water for purposes of domestic use. The answer is, that the small amounts of chlorine required, do not in any way affect the water. Where it might be necessary to use large amounts of chlorine, the water must of a necessity receive preliminary treatment to allow of only reasonable amounts being used. The author is of opinion that our present knowledge of the subject limits the permissible amount of chlorine to about .50 parts in 1,000,000.

At the above rate of application it would require with chloride of lime containing 33 per cent. of available chlorine, as follows:

1.5 pounds of chloride of lime to 1,000,000 pounds of water equals 1.5 pounds of chloride of lime to 100,000 gallons of water, equals 15 pounds of chloride of lime to 1,000,000 gallons of water.

In order to make a 1 per cent. solution sufficient for 1,000,000 gallons of water, it would require the 15 pounds of chloride of lime to be mixed with 1,500 pounds of water, or 15 pounds of lime to 150 gallons of water.

There is no doubt that disinfecting processes of water treatment have come to stay, just what form their exact relation will take up relative to older methods is yet somewhat undecided. However, I have as far as possible endeavored to point out the present situation relative to purification of water as far as the removal of pathogenity is concerned. Space will not allow of entering into the hundred and one other impurities which it may at times be necessary to treat. We have algæ growths, vegetable iron growths, such as ferriginous slime, spongidæ, all kinds of complications caused by inorganic matters in solution,

all of which are interesting and capable of remedy.

Sufficient is it, if I have shown you that waters which at one time would have remained condemned as possible sources of water supply, may now be brought into general use.

ORAL HYGIENE

By ALEXANDER SCOTT, L.D.S., R.C.S.I.

Is life worth living? The answer I should give would be: That depends upon the condition of the mouth and teeth; for life with a clean, healthy mouth and good teeth usually means good health and spirits. But a septic mouth full of bad teeth and diseased gums must bring in its trail not only pain and suffering, but many serious forms of illnesses, making life anything but joyful, and one's daily work a task.

The meaning of the word septic is foul. When I speak of a septic mouth I mean a mouth which has badly decayed teeth—a mouth full of disease germs which poison the blood, caused by being neglected. It is generally accompanied by a foul and fœtid breath. It has been stated on good authority that 90 per cent. of the population suffer more or less from defective teeth. Fifty per cent. of the population have more than half their teeth either decayed, filled, or extracted. During the last 50 years the medical profession has gradually come to perceive very clearly that there subsists an intimate relation between the well-being of the teeth and that of the body as a whole. On the other hand, bodily disease and bad health may exercise a considerable influence upon the condition of the teeth. Much has been done for the common weal by the giving of instruction either publicly or in schools in the important art of cooking. Obviously increased assimilability of food is even more important than a mere increase in the supply. But food of the best quality and cooked to perfection may, like poorly-invested capital, yield very small returns to the individual who, possessing functionally faulty teeth, can only imperfectly masticate it, and who, therefore, suffers from disordered digestion and consequent mal-assimilation. His undigested food is as much lost as if it were cast into the drains. Further, it may be remarked that the purity of food or of drinking water can be of small avail to the person who pollutes all that he eats or drinks by taking it into a mouth swarming with septic germs. It is quite evident that what has not yet been at all effectually impressed upon the community at large is the inter-dependence of the state of the mouth and teeth and that of the other organs of the body. Many persons suffer more or less for years before, to their surprise they learn, either from their medical man or their dentist, that the sole cause of their suffering is the condition of their mouth and teeth. The pale, emaciated man or woman one so often meets in manufacturing centres is almost reduced to a complete wreck from mal-nutrition, due to indigestion and defective assimilation of improperly masticated food, his or her teeth having long ceased to be more than vestiges of their original selves. A type of patient too often met with is the pale anæmic girl, ill-nourished and unable to benefit by her food because of a chronic gastritis; such a patient will be found to be suffering from the ravages of dental caries to such an extent that scarcely a whole tooth remains in the mouth. Moreover, the cavities in her teeth are serving as centres for the propagation of harmful organisms. How often, again, do we come upon people suffering from chronic malaise, in which oral sepsis —and not, perhaps, deficiency of teeth— is the crying evil. Among such is the spare, debilitated, sallow-faced female who complains of headache, langor, loss of appetite, flatulence, indigestion, depression of spirits, etc., symptoms that prove to be wholly due to fermentative and putrefactive processes set up in the gastro-intestinal tract by the continual swallowing of pus proceeding from inflamed gums, and setting up toxic infection, producing all sorts of evils, which frequently end in septicæmia,

or blood poisoning. And few, if any, will be inclined to question the statements of an eminent authority like Dr. William Hunter, who states that oral sepsis as a potential disease factor is more important than any other source of sepsis in the body.

In our general hospitals we find ophthalmic doctors attributing localized inflammation and other diseases of the eye due to pyorrhœa alveolaris—a very common disease in the tooth sockets; laryngologists ascribing laryngitis, pharangitis, and tonsilitis to organisms born and bred in the mouth; aural surgeons attributing inflammation of the middle of the ear to similar inflammatory processes in the mouth; dermatologists ascribing eruptive affections of the skin to the swallowing of organisms found in an unhealthy mouth; and general surgeons associating oral sepsis and appendicitis as cause and effect.

I have endeavored to show how close is the relationship between dental surgery and other departments of medicine, and how absolutely dependent the health of the body is upon the condition of the mouth. I am not exaggerating or over stating the value and importance of possessing a healthy mouth and a sound set of teeth. It is said only 10 per cent. of the population possess a sound set of teeth. It is hardly necessary for me to say the most potent cause of caries is absolute neglect of cleaning the teeth and keeping the mouth antiseptic. Children who are illnourished from infancy are usually delicate, and this is one great cause of poor teeth. Taking iron tonics is also bad for the teeth, and unless the teeth are cleaned immediately afterwards it is very destructive to the enamel, as they contain mineral acids. All mineral acid tonics should be taken through a glass tube, and even then the teeth should be well brushed after each dose. The strongest and best teeth need attention to keep them sound. An indifferent and poor set of teeth need infinitely more care and attention. Some people bestow far more thought and care on their boots and general appearance, but absolutely neglect their teeth. When the enamel breaks away or decays into a small hole we see a discolored spot, and if we put a pointed instrument into that spot we find it quite soft and possibly painful to the touch. That brown spot is the soft dentine which is just under the enamel. If the tooth be neglected that hole will rapidly get larger and deeper until it penetrates into the nerve cavity. Now, most of us have had symptoms of a carious tooth, which is known as toothache. There are two kinds of toothache — one which proceeds from an exposed nerve in the tooth in which caries or decay has penetrated to the nerve or pulp cavity, and that which proceeds from a dead tooth. A dead tooth is one in which the nerve has died. If you get a pain in a dead tooth it is caused by a putrefactive nerve being shut up in the tooth cavity. In that condition a bad gas is given off, which, if it cannot escape through the cavity, owing to the pressure of decomposed food in the tooth, the foul gas forces its way through the canal in the fang, causing great pain, and swelling of the gum takes place, and results in an alveolar abscess, and pus is formed, and this sort of thing often ends with sending for the physician instead of the dentist. Some people suffer very much from neuralgia, which generally can be traced to some local cause such as a badly decayed tooth. It is possible to have neuralgia without a decayed tooth; that proceeds from a debilitated condition of health. Symptoms of caries also may be known by a fœtid breath.

This brings me to the important consideration of the prevention of caries. Preventive measures may be considered under two heads. First, and by far the most important, is to build up the constitution in childhood with suitable food; food and environment have much to do with making good or bad teeth. See that all food is properly masticated and the teeth kept thoroughly clean. A child must be kept in good health to have good teeth. Secondly, to have the mouth examined periodically, say every six months, by a dentist and if there be any teeth needing attention have them put right without delay, and so prevent the ravages of caries spreading, which if neglected must result in a septic mouth, and possibly serious constitutional disturbance. It is not economy to neglect your mouth; a neglected mouth might lead not only to serious illnesses, but in the long run the expediture of a great deal of money and great pain and discomfort in the bargain.

World Views

The Campaign Against Sleeping Sickness.

The British South Africa Company has decided upon the despatch of a Special Commission, Reuter's Agency understands, to investigate the sleeping sickness in Rhodesia.

The Commission will consist of Dr. Aylmer May, Principal Medical Officer of Northern Rhodesia; Dr. A. Kinghorn, of the Liverpool School of Tropical Medicine; Dr. Leach, of the Northern Rhodesian Medical Service; Mr. O. Silverlock, entomologist; and Mr. Jollyman, bacteriologist. All the Commissioners, with the exception of Dr. May and Dr. Kinghorn, are already in Africa. Dr. Kinghorn sailed from England on February 18, and will be followed later by Dr. May.

An expedition sent out by the Liverpool School of Tropical Medicine is already on its way to the Congo under Professor Todd, well known in connection with sleeping sickness research, and two assistants, and it is proposed that a further Commission shall go from England to conduct separate investigation in another part of the Congo.

Dr. Aylmer May states that the sleeping sickness in the Luangwe Valley of Northeastern Rhodesia, where the Chartered Company's Commission is about to work, is of an entirely different type from that of ordinary sleeping sickness, inasmuch as it is evident that it is not transmitted by the *glossina palpalis*. This insect does not exist within three hundred miles of the valley, and the majority of those attacked have never been in the *Palpalis* area. It is suggested that this disease is carried by the *Morsitans* fly, an insect which, unlike the *Palpalis*, is not confined to well-defined and limited areas in the neighborhood of water, but is distributed over large areas. It does not, however, seem to follow that because the *Morsitans* is a disease-carrier at one altitude, it is necessarily equally dangerous under other climatic conditions. Five Europeans have been stricken with this form of the sleeping sickness, of whom three are dead and two under treatment. Dr. Aylmer May expresses the opinion that if the conditions agreed to by the Conference recently held at the British Foreign Office are carried out, there is not much danger of the disease spreading from the Congo southwards with the extension of the railway. With proper precautions there is no cause for alarm, as the conditions in Northern Rhodesia are entirely unsuitable to the spread of the malady.

Shuttle-Kissing in England.

The London Lancet calls attention to the possible substitution of a mechanical device for the process called "shuttle-kissing," from which there comes without doubt more or less tuberculosis infection or some predisposition to the disease. The article calls attention to the diseases of occupation among weavers, noting first the case of the ugly fairy god-mother of Grimm's fairy tales, who was afflicted with acromegaly. When asked why her lip is so large, she replies that it is from licking the thread. In "shuttle-kissing" the thread is drawn through a little hole in the shuttle by sucking, an unhygienic process. For, in the first place, several persons use the same shuttle and any infection of the mouth is likely to be disseminated among the other users in the mill. Then, again, much dust accumulates about the hole. It may be the fine line of thread or yarn or sizin, clay or coloring matter. This is drawn into the respiratory tract and can hardly fail to induce pulmonary disease, or at least irritation of the air passages. It is believed that a mechanical threader has been invented which will do away with this objectionable and disease-producing process.

Effect of Pure Water on Public Health.

One of the most interesting and widely important papers for a season or two is that by Professor W. T. Sedgwick and J. Scott MacNutt, on the general improvement in mortality rates due to the use of purified or better water supplies for public consumption. The article is published

in a recently issued number of the Journal of Infectious Diseases. Consideration of water supplies in its modern close relations to the public health seems to have had its impetus from certain observations made independently but almost simultaneously in 1893 by Dr. J. J. Reincke, of Hamburg, and Hiram F. Mills, of Lawrence. Hamburg was taking the water of the Elbe, and Lawrence that of the Mirrimac river. Serious outbreaks of disease had called attention of the authorities to the necessity of a better water supply, and its introduction was watched with extreme closeness. Both Mills, who is a member of the Massachusetts State Board of Health, and Dr. Reincke were struck by the fact that the general health conditions, as manifested by the mortality rates, were improved. At about the same time Allen Hazen, of New York, who ranks high as a water engineer, gave attention to the same subject. Some years elapsed before he published his results, the International Congress of Engineers at St. Louis in 1904 being the important setting forth of his studies, and here he formulated a numerical expression for the comparative effect of the purification of the water supply upon typhoid fever mortality and total mortality. To the first-named discovery, sanitarians have given the name Mills-Reincke phenomenon, and for convenience in nomenclature Sedgwick and MacNutt have called the suggestion of comparative relationship the "Hazen Theorem."

Few health propositions have more popularity than the relationship between water supply and typhoid fever, but the other one, that between water supply and general health of the community, has not attracted the attention that it merits. Hazen's statement at St. Louis in 1904, had for its central fact, that "where one death from typhoid fever has been avoided by the use of better water, a certain number of deaths, probably two or three, from other causes have been avoided." It had been natural to expect a decline in typhoid, but both Mills and Reincke noted other betterments in the general rate than the decrease in the fever could not account for. Reincke, for example, noted the large decrease in infant mortality—under one year of age—that was at once evident in Hamburg. Here the rate had been very high, when the figures of the leading cities of the world of to-day are considered, being 277 per 1,000 births in 1885;; 369 in 1886; 347 in 1887; no time less than 275 and rising to 405 in 1892. In 1893, with filtered water it fell to 240. He saw also diminution in tuberculosis and other infectious diseases. Mills in Lawrence noted a drop of from 52 deaths a year to 12 with the filtered water, and less general deaths, which is equivalent, of course, to an increase in population. A contemporary statement puts the matter thus: "The decrease in deaths has not been limited to deaths caused by diseases which are known to be conveyed by water, nor to infectious diseases, but includes so broad a range of diseases that we must conclude that the general health of the people has been improved and their ability to resist and overcome disease has increased." Hazen, in his consideration states that he believes the whole of the decrease in typhoid to be due to improved water and applied quantitative tests, concluding that the general improvement was seven times as great as could be credited to typhoid alone. His line of argument was that in 18 eastern cities between the years 1890 and 1900, cities that had made no radical change in the water supply, the average lessening of the death rate was 2.28 per 1,000 of population, while in those cities where there had been a marked improvement in the water, the decrease was 4.4 per 1,000.

Education and the better understanding of the elementary laws of hygiene and sanitation are, of course, responsible for a decrease in the general rate, but above this amount the credit has been given to the water. Hazen stated that it might not be easy to show how the water is related to deaths other than those by typhoid, but says, "It may be that a good water supply, used freely and with confidence, results in a better tone in the systems of the population, and so indirectly to a lower death rate, and that a part of the reduction is represented by diseases having no recognized connection with the quality of the water supply." This conclusion is important and far-reaching and is without doubt the key to further betterment of the public health, but it has not heretofore attracted the attention that it should receive. Sedgwick and MacNutt have sought to remedy, so far as may be possible at the present moment this neg-

lect by carrying forward the investigation some steps and bringing the results of their investigations to the attention of the sanitary world. Hazen applied to the problem quantitative methods; he essayed to answer the question, "To what extent is the general death rate reduced?" Sedgwick and his collaborator take up a review of the evidence and consider the question, "In what particular diseases does this reduction take place?" The former portion of the work is based on the knowledge that comparatively few students of public health are aware of the extent of the studies of Reincke and Mills and no one had hitherto attempted to secure any thorough confirmation of their results. The paper therefore reviews the evidence already presented by the three sanitarians connected with the research together with a discussion of fresh material.

Reviewing the Hamburg and the Lawrence figures, the authors have tabulated and put into graphic form the death rates from 1872 to 1900 under certain divisions, typhoid fever, inflammatory diseases of the respiratory organs, pulmonary tuberculosis, diarrhœa, and gastro-intestinal diseases, deaths under five years of age and the total rate minus the typhoid component. The charts give the strongest confirmation to the statements of Dr. Reincke, showing in every instance the large improvement due to the introduction of the filtered water in 1893. Not only have there been large decreases, but there is absence of great fluctuations, in diarrhœal diseases, for example, in place of the former jumps about from 170 or 180 per 100,000 to 250, 350 and even 530, there has been a comparatively steady rate, 110 to 170; the former jumpings of as much as 300 per cent. are not now more than 70 per cent. The quieting down of a curve in this manner is evidence of the control that sanitarians have been able to effect upon disease. While natural causes may effect it and lower it at times for a year or two, the sudden large fluctuations show it to be uncontrolled by man. The maintenance of such a curve with reasonable steadiness is therefore evidence of progress. All of the other Hamburg curves show during the same period the same kind of controlling influence. The new discussion is a close and critical analysis by disease and by age periods, the result of which shows a sudden and permanent drop in the total death rate minus the typhoid component and other diseases, and the improvement that Dr. Reincke attributed to the purification of the public water supply is much less than its true share in the remarkable reduction in the total and specific death rates of Hamburg. In a similar way the Lawrence statistics are considered and analyzed, with the same results. Following this portion of the investigation attention is paid to five other cities, Lowell, Albany, Binghampton and Watertown, with Manchester, N.H., as a check upon the work, for Manchester always has had a good water supply. A larger number of cities might have been taken, but these were places for which accurate statictics were available. It is a failing of most American cities that it is difficult to secure reliable figures, on account of inaccurate estimates of population, deficiency of registration and lack of uniform system in collecting and digesting statistics, which uncertainties put too great a burden upon the investigator. Then, again, it is more satisfactory to work with places at no great distance, and again, local statisticians may more easily have access to the data necessary and can study and report on the local problems. The whole matter is one with many causes of variation. It will be interesting, for example, to know what is the position of Washington, in which the filtration of the water supply was not followed by any material decline in the death rate from typhoid fever, and in other places where the pollution of the supply has been varied, with much typhoidal infection, for example mixed with little sewage or little infectious material in a great quantity of sewage. In Hamburg the saving in typhoid mortality was slight in comparison with the reduction in the general death rate (1 to 16), while in other cities, there was a different ratio to each one, Binghampton being the lowest with the ratio 1 to 1.5.

A most surprising result of the study of Sedgwick and MacNutt is the disclosure of the remarkable relation subsisting between polluted water and infant mortality. The graphical charts of these authors bring out the principal facts most strikingly of important decreases following purification of supply. This is a matter that students of preventive medicine will find an interesting one to follow, and

they can doubtless shed much light on the solution of one of the most serious sanitary problems of the time. Diarrhœal and gastro-intestinal disorders have a relation to polluted water second only to that to contaminated milk. In tuberculosis the evidence though less striking, is interesting and suggestive. There can be little doubt that a considerable portion of the decline in mortality from this disease in Lawrence and Lowell was due to the change in the water supply. For pneumonia, and the remaining infections, the decline is evident on the improvement in the supply. With reference to pneumonia an interesting by-product of the charts is the upward tendency constantly of this disease in the American cities. Although the purer water affected and lowered the rate, it still seems to have the same kind of upward tendency that it had before.

To Prevent Typhoid.

The menace of typhoid fever in country districts, a menace arising from polluted drinking water — is thoroughly considered in a report by Myron L. Fuller, of the United States Geological Survey, in which the various sources of pollution are indicated, and suggestions are given for means of protection.

Typhoid fever rates are usually greater in the country than in cities, despite the prevailing belief that farms, isolated as they are from areas of congested population, are ideally situated for obtaining pure and wholesome water.

Failure to protect adequately the wells in farming districts is given in the survey's report as to the most common reason for their pollution, and ignorance of the manner in which ground water circulates is the cause of the faulty protection. Chemical analysis is not rated high by Mr. Fuller as a means of detecting polluted water, for he asserts that a careful common-sense inspection of the district is usually much more to the point.

Sources of pollution in the vicinity of a well or spring should be noted wherever possible, and drinking water should not be drawn except at a safe distance from them. The distance required for absolute safety varies greatly with the character of the rock. For wells sunk in sandstone, slate and shale, 100 feet may be sufficient; where the surface stratum is composed of fine sand, 200 feet should be allowed, and where it is limestone or granite, much greater distances will be necessary. Water may run polluted in limestone for miles, so that wells in regions where limestone makes up the greater part of the surface rock should be carefully examined after rains for mud and floating particles, for these are pretty sure signs of pollution.

For protecting wells, springs and cisterns, Mr. Fuller advocates, first of all, a water-tight lining to keep out surface water. Wells and springs should always be located a safe distance away, though the custom prevails in country districts of having well and trough side by side.

Considering the same subject of typhoid the United States War Department has issued a bulletin according to which one-seventh of the soldiers in the United States army have been rendered immune to typhoid by vaccination; and to show the need of more effective dealing with the disease which has been the scourge of armies in past years, a few statistics are quoted: During the Spanish-American war there occurred 20,738 cases of typhoid among 107,973 men, with 1,590 deaths. In the Boer war the English had 31,090 cases, with 5,877 deaths, and during the Franco-Prussian war the Germans had 73,196 cases, with 8,789 deaths.

As further evidence of the effectiveness of inoculation some facts are quoted in the bulletin from the experience gained last summer during the army manœuvres at Gettysburg:

"Ten days previous to leaving Washington barracks," says the bulletin, "92 members of Company A, First Battalion of Engineers, received the first anti-typhoid inoculation, and after arriving at Gettysburg they were given the second and third inoculations. Two other members of the command had already had typhoid fever and were, therefore, immune. There were 24 members of the company who were not immune and who were not inoculated. Some of them objected to the vaccination and others were absent when the treatment was initiated. Five days after the troops returned from Gettysburg, two of the uninoculated men developed typhoid fever, and within the next twelve days four secondary cases of the fever occurred, also among the uninoculated. Not a single case occurred among those who had been vaccinated, while 25 per cent. of the non-immune, liv-

ing under exactly the same conditions in camp and in the barracks at Washington, succumbed to infection."

It is further claimed that the experience of this company has been duplicated in other commands, and that no bad results have followed over 31,000 inoculations in the United States army, which, it is affirmed, affords conclusive proof of the safety of the serum used. This serum is prepared at the United States Army Medical School at Washington, with the greatest care, and medical experts of the army who have studied the matter carefully express the conviction that the immunity granted by inoculation will last for a period of at least three years, and they make the recommendation that in the event of hostilities the vaccination of the militia and volunteers composing the reserve army be made compulsory before mobilization.

Social Poison Centres.

A writer in a magazine devoted to the consideration of social and economic questions, makes the suggestion that the wage-earners of this continent be protected against the competition of the pauper labor of Europe.

It might be supposed that after so many years of practical statesmanship applied to the subject, our wage earners might feel reasonably secure from those paupers.

But when the paupers come rushing into America at the rate of over a million a year it is difficult for the highest schedule to assure the American wage earner that he is free from the competition which has been his political bogie man for two generations.

Now comes the Survey Magazine with the proposition that the principle of protection be applied directly for the benefit of the wage earner by passing laws that no alien, during a period of five years next following his arrival on this continent, shall be permitted to work for less than $2.50 a day.

Of course, no one doubts for a minute that this proposition will be hailed with delight by the men who have made the framing of tariff schedules to protect the American wage earner their chief business in life. One can hear the chorus of welcome swelling in all our large cities. The contention of the free trader that the tariff protects only the employer will at once be refuted by this new application of the principle. The pauper labor of Europe will be eliminated as a competitive force in industrial life. The struggling American wage earner will then have nothing to compete with but the pauper labor of his own continent.

For a graphic picture of that pauper labor one may recall Ida M. Tarbell's article on Rhode Island. It was printed in a recent number of the American Magazine. The things which this gifted woman saw in the textile communities of a typical United States industrial state test the credulity of the reader. The insanitary conditions in the factories, the polluted air, the lack of even sufficient drinking water or of decent toilet facilities, the high pressure of the work tending to nervous breakdown, the early old age—all these are elements in the picture.

But the most striking feature is the little cemeteries with the rows and rows of tiny graves, telling of the fearful mortality among the children of these industrial communities.

The reason for this harvest of death is plain. The wages earned by an operative in the mills are insufficient for the support of a family. The work of the husband at the machine must be supplemented by that of the wife. There is no home. There are a place to sleep, a hurried bolting of quickly and badly cooked food in the morning, a dash to the mills, ceaseless toil in foul air, a cold lunch at noon, the grind of the machines until night, a dash to living quarters, a hastily concocted meal, then for the wife what mending and cleaning and other things may be required in this substitute for a home.

The wife leaves her loom for a couple of weeks to bring another human into the world. The baby is given over to the care of an "old woman," or, if more fortunate, to a day nursery. The mother goes back to the machine. It is all the more necessary for her to do so now, for she has more mouths to feed.

This is the normal process of family life. It takes no account of long illness nor disabling accidents. The children come into the world weak and anemic, for it is not in the nature of things that mothers under such strain and living such lives should have healthy babies. The children fall easy prey to disease, and are still

further weakened by lack of mother's care and by unwholesome food and surroundings. The cemetery population is appalling, but logical.

Some of the children survive. Perhaps before the parents break down or are disabled the older children are big enough, so that perjury can get them past the inadequate child labor laws and into the mills. And the process begins all over again in a new generation.

What is going to protect the wage earner against this kind of competition? And even more important, what is going to protect America from the poison that is sure to flow from the innumerable social ulcers of which these Rhode Island sores are a type?

Hygiene and Missionary Work.

Few people outside the churches, and, as a matter of fact, only a small proportion within them, realize the change which has come over missionary work and effort during the last quarter of a century, according to the Sanitary Record. The days when the natives were simply looked upon as heathens have long since passed away, and the old methods of missionary work have gone with the old ideas. Workers in the mission field to-day realize that if the people are to be brought out of darkness, other things than theological dogma must be brought to their notice. At the recent great Missionary Conference at Edinburgh, in the report on the "Preparation of Missionaries," this point was emphasized. The foremost qualification needed in one going to the mission field is good health. Special arrangements are now made for would-be missionaries to obtain this desired knowledge, and the Livingstone College, England, does this work effectively. The students who go from it take with them a knowledge which helps them greatly in their work, and which as much as anything else helps to make their efforts effective among the native races. It is the part of effective preparation to see that he both knows how to keep himself so, and has formed a habit of paying reasonable attention to the subject. This involves that a man going to a new climate, especially if he is likely to be some distance from medical atention, should know enough of normal physiological action to be able to watch over his own body with as much intelligence as a typewriter does over his machine, and he should know enough of the actions of drugs not to play rash experiments. Missionaries go abroad to do mission work, not for the good of their health. On the other hand, there is a morbid pride in being overworked and run down, in being too busy to keep well, and an uncalled for carelessness in such matters is also a great evil. The life of a missionary is of so much value that whatever can be done to preserve it should be a matter of moment to all mission boards. Much of the loss of health in the past, and many deaths, have been produced by what we now regard as preventable causes. Malaria, dysentery, typhoid, yellow fever, cholera, sleeping sickness, plague, are diseases prevalent in regions in which the missionary must live and work, but to a very large extent the possession of a readily acquired knowledge will enable the missionary to escape them. It is not enough to say that the medical missionary on the spot can look after the health of his colleagues. It requires that the non-medical missionaries themselves should understand the dangers with which they are surrounded in tropical climates, or they will not escape.

Inaccurate Ventilation.

There appears to be considerable difference of opinion among real estate men, as there is among builders, relative to the "fresh air" proposition in homes. While some of the owners are striving to plan for all kinds of ventilation, others are striving to tighten unnecessary leaks in the houses, so that they may be cheaply heated, contending that cheap heat and inaccurate ventilation do not go hand in hand. One of our builders thus writes upon the question:

The air leakage at windows which interferes with proper ventilation is evident enough at this season to those who have to sit near the walls of high buildings exposed to the wind, but probably few recognize that from a fifth to a sixth of the coal burned for heating purposes is spent in raising the temperature of the cold air that enters the buildings through the openings around the windows. When this assertion was first made a few years ago by Mr. H. W. Whitten, few heating specialists would agree to it, but experiments and tests which he has been con-

ducting every winter have convinced many of his former critics of the truth of his claim that about nine-tenths of the total exposure loss was due to this leakage. Since then, heating and ventilating engineers have shown a tendency to urge the adoption of some of the special devices for stopping the drafts around windows, the best of which will shut off over 90 per cent. of the leakage.

Mr. Whitten recently found in a Pittsburg building that the aggregate clear opening for 150 windows was between 45 and 50 square feet, an amount that seems startling when it is considered that the intake of a fan for heating this structure would have a cross-section of not over 20 square feet. If the windows are fitted with tongued and corrugated weather stripping and interlocking stripping for the meeting rails, Mr. Whitten states that from the heat-unit requirements calculated in the standard manner, from 35 to 40 units may be deducted for every linear foot of sash so protected, and 85 per cent. of the radiation added for exposure of glass surfaces may be omitted. This will enable the heating plant to be reduced from 15 to 25 per cent.

This subject has been discussed several times by the American Society of Heating and Ventilating Engineers, and will be brought up, it is understood, at the next meeting. It deserves to be thoroughly threshed out, particularly methods of checking leakage where metal sash is used, because the coal bills for warming buildings are growing constantly larger as fuel becomes more scarce, and anything that will reduce them without adding equal expense in other ways will be welcome

Mind and Body.

The London Lancet reports a very remarkable example of the possibilities of mind-influence in controlling bodily functions which has recently been brought before the medical fraternity in Vienna. It is stated that a man who lately came under the observation of an Austrian physician possesses "such an extraordinary control over his physical organization that he was even capable of voluntarily changing the position and size of his heart." Also that "He could reduce the frequency of its beats from 80 to 50 each minute, and he could bring it either into the right half of the thorax (chest), or into the middle line by suggesting to himself (1) that it was going too fast, or (2) that his left lung was collapsed. He could produce at will hyperæmia (congestion with blood), and swelling of any small area of the skin by auto-suggestion, merely by impressing on his mind the belief that he had burnt himself at that spot." It is also reported that this remarkable individual is able voluntarily to contract and dilate the pupils of his eyes either together or separately.

The Fight Against Consumption in Many Countries.

The National Association for the Study and Prevention of Tuberculosis tells us that other associations for the prevention of tuberculosis have been formed in Cuba, Porto Rico and Trinidad. In Cuba there are over 40,000 deaths from tuberculosis every year, and the death rate from this disease is nearly three times as high as in the United States. In Porto Rico there are over 6,000 deaths every year out of 1,000,000 inhabitants. In Trinidad, the death rate from tuberculosis in Port-of-Spain, the only place where figures are available, was 4.75 per 1,000 in 1909, nearly three times the rate in New York City. Conditions in the other islands of the West Indies, where no active campaign against tuberculosis has been undertaken, are even worse. The chief reason for this high mortality is found in the unsanitary, dark, and poorly ventilated houses of the natives of the islands.

In Denmark, the campaign against tuberculosis has been carried on systematically since 1895. The reporting of living cases of tuberculosis in Denmark has been more successful than in almost any other country of the world. The death-rate from pulmonary tuberculosis has fallen from 19.32 to 13.33 per 10,000 from 1895 to 1908. There is now one sanatorium for every 1,244 inhabitants, and every tuberculosis patient is assured of treatment at a cost within reach of anyone. The state pays three-fourths of the expense of treatment and the patient or his community the remaining fourth.

The Italian Government, on account of the number of turberculosis cases among the Italian emigrants sent back from America, has appointed boards of examiners in the seaports, whose duty it is to

report the arrival of tuberculous persons. These are then kept under observation in those places where they settle, to prevent further spread of the disease. The erection of new sanatoria and other tuberculosis institutions is being urged in Italy, and the number of beds for consumptives has been considerably increased in different places.

Consumptives in Syria are treated to-day much in the same way as the lepers have been for the last 2000 years. Tuberculosis is a comparatively recent disease among the Arabs and Syrians, but so rapidly has it spread that the natives are in great fear of it. Consequently when a member of a family is known to have the disease, he is frequently cast out and compelled to die of exposure and want. A small hospital for consumptives has been opened at Beyrout under the direction of Dr. Mary P. Eddy.

The Anti-Tuberculosis movement was started in Hungary in 1894, and in 1898 there were five institutions for the treatment of consumption. To-day the campaign is encouraged and financed by the government, and over 200 different agencies are engaged in the fight. A permanent tuberculosis museum has been established at Budapest and a carefully conducted campaign of education is being carried on.

According to a recent report by Dr. Conrad Biesalski, of Berlin, there are 75,000 cripples in the German Empire out of a population of 60,500,000. Over 50,000 of the cripples are in need of proper treatment. Dr. Biesalski states that in 15 per cent. of the cripples examined their deformity was due to tuberculosis of the bones and joints, and that there were 10,000 such children in great need of medical treatment. He advocates the establishment of seaside sanatoria for this latter class of cripples.

Japan is not lagging behind in the fight against tuberculosis. The Japan Health Association has over 200,000 local members and carries on a campaign of lectures in the cities and towns of the country. Tuberculosis is increasing in Japan, due chiefly, Prof. S. Kitasato, of Tokyo, says, to the rapid development of the factory system of industry, the introduction of modern methods and manners of civilization, and the increasing acuteness of the struggle for existence.

When the International Congress on Tuberculosis meets at Rome next September, representatives of over thirty national and provincial associations organized to fight tuberculosis will be present. Among the associations which will be represented are the United States, Canada, Cuba, Trinidad, England, Wales, Ireland, Norway, Sweden, Denmark, Russia, Germany, Belgium, Holland, France, Switzerland, Portugal, Italy, Greece, Bulgaria, Hungary, Austria, New Zealand, Japan, Cape Colony, Argentina, Brazil, Chile, Newfoundland, Roumania, Uruguay and Venezuela.

Tuberculosis is being fought in Northern Korea, according to a report from Dr. Edwin M. Kent, received by the Methodist Board of Foreign Missions. Dr. Kent, who is a medical missionary stationed at Haiju, says that since he established a dispensary at the little hospital in that city, the people of the entire community are leaving their doors open at night, for few of the houses have windows. The native attendants at the hospital are now so accustomed to the regular instructions about fresh air that they will call this sort of advice "yeggy," and at a sign from the doctor will dispense volumes of it to the unsuspecting sufferer. Such has become the hospital's reputation for fresh air advice that a native living in Haiju expressed himself as only waiting for warm weather before going to the hospital, "for," said he, "the doctor will urge me to leave the door open and that is very hard in cold weather."

An important report in regard to Canada, on preventive measures to be taken to stop the ravages of consumption in the Province of Quebec, as prepared by the royal commission on tuberculosis, was brought down in Quebec's lower house last month by Hon. Mr. Decaris, Provincial Secretary.

The commission, which had among its members several of the leading medical authorities of the province, draws attention to the need of combatting the disease by medical inspection of schools and shops and factories, by the opening of dispensaries, isolation hospitals and sanatoria. It is also recommended that an inquiry should be made into the hours worked in different industries, and if the hours are excessive, the same should be remedied by legislation.

It is further recommended that a veterin-

ary surgeon should be appointed to be advisor to municipal inspectors and farmers who are engaged in the milk industry, and who shall have charge of the distribution of tuberculin for cattle infected with tuberculosis.

Vital Statistics.

Dr. W. H. Guilfoy, Registrar of Records in the Department of Health of New York, defined vital statistics, at the last meeting of the American Public Health Association, as "the numerical registration and tabulation of population, marriages, births, diseases, and deaths, coupled with analyses of the resulting numerical phenomena with the end in view of 'searchlighting' the path of sanitary progress." In the course of his paper he said:

"Marriage statistics form an interesting part of the subject by reason of their bearing upon the increase of the population and their use as an index of worldly prosperity. The full registration of births occurring in the community is of great value from the viewpoint of the vital statistician, and yet it must be admitted that very few of the cities, not to speak of the States in the United States, are in receipt of 90 per cent. of reports of births occurring within their limits; in Great Britain and Europe the ordinary measure of the mortality among infants under one year of age is the number dying per 1,000 births reported during the year; in the United States at the present time such a standard could not be set up in any one State, and in very few cities; the birth rate of a community has a far-reaching influence upon the increase of population, age, and sex constitution thereof.

"The chief and noblest aim of the vital statistician is to point out how, when, and where the best efforts of the health officer and hygienist may be directed to conserve health; his analysis of returns will show what forces have been at work in the past tending toward the suppression of all the various forms of destructive disease, at what psychological moment these forces should be put into operation, and in what spot action should be begun.

"Improved vital statistics is the demand of the hour, and in so far as further progress is made in this direction, then so far will corresponding advance be made in preventive medicine; the day of comparing the salubrity of a town, city, state, or nation with that of another by the use of the crude death rate is passed; the constant repetition of the warnings given in the past that the crude death rate should not be used in this manner is bearing fruit.

"It has been repeatedly shown that given two cities with varying age groupings of the populations, but with exactly the same death rates of these age groups, that one city will possess a much lower general death rate than the other, due not to healthier environment, but to the more favorable distribution of ages of the inhabitants; sex distribution modifies the death rate, the presence of a large proportion of females than males in a population always tending to lower the rate."

Rag Flock and Public Health.

No doubt a large trade is done in rag flock in the making of bedding, mattresses, chairs, etc. Recently, says an English journal, the use and condition of flock was inquired into by the British Local Government Board, partly with the object of seeing what were the best means of rendering the material free from germs of disease. In the event of legislation following upon the Department inquiry, a deputation has waited upon the President of the Local Government Board to request that manufacturers should be compelled to sterilize the raw material by steam. A petition to this end has been signed by 780 representatives of all sections of the trade, including a number of medical men.

Manufacturers, however, are rather divided in regard to the most efficient process for rendering the flock innocuous. Some prefer washing, others sterilization by steam. Mr. John Burns, with his customary penchant to find things out for himself, has visited several manufactories and he now advises both sections of the trade to put their heads together with the object of agreeing upon what would be the most practicable and efficacious method. He has informed the trade that clean and wholesome textile material for bedding and all other classes of upholstering is a matter of actual importance to public health. He also asserts that he has seen material converted into flock that no amount of sterilization could make altogether harmless from a health point of view. On the other hand, he expressed the opinion that washing would have re-

moved nine-tenths of the objectionable elements.

Child Mortality.

In his lecture before the last meeting of the Royal Sanitary Congress on "The National Importance of Child Mortality," Dr. Arthur Newsholme said that a careful study of infant mortality made it clear that it was greatest under urban conditions of life. Urban life was even more destructive under ordinary circumstances for children than for adults. The high infantile mortality in the counties of Glamorgan, Durham, Lancashire, the West Riding, and Staffordshire, and the low infant mortality in the counties of Oxford, Hereford, Berkshire, Dorset, etc., were ascribable chiefly to the fact that in the former the population lived in houses which closely massed to a preponderant extent in large villages or in small or large towns, while in the latter the houses were largely scattered in lonely homesteads, hamlets, and small villages. It was not that any special virtue appertained to the sanitary authorities of these rural counties. It was rather that the sanitary authorities of the counties having high infant mortality had not realized that the risks of urbanization could only be obviated by strenuous and continued effort on their part. The responsibility for a large proportion of the total infant mortality from infantile diarrhœa must be borne by sanitary authorities. To some extent it was in the power of sanitary authorities to make domestic sanitation easy instead of extremely difficult. The responsibility for the terribly inferior housing which prevailed, particularly in the mining counties, was divided between the sanitary authorities, the colliery owners, and the miners themselves. The colliery owners who allowed the continuance of insanitary houses, grossly overcrowded under their "tied-house" systems, should be taught by the pressure of public opinion that the public were not contented to continue to purchase coal at a price which appeared to imply that the miners' families should live under conditions so unsatisfactory as to involve the sacrifice of the lives of a larger proportion of their children. The miners received relatively high wages, but contented themselves with the grossly inferior homes which in a large proportion of the mining districts of England were supplied to them under the "tied house" system. Until they were willing to spend considerably larger proportions of their weekly earnings in higher rentals and less in pleasure-seeking and ofttimes dissipation, the sins of the parents would continue to be visited upon the children.

Another Word on Panama Canal Zone Sanitation.

All the world is aware, in a general way, that sanitary conditions in the Panama canal zone have been vastly improved since American methods, applied by Americans, were introduced in that region. Indeed, it is quite generally understood that the former conditions down that way could not properly be designated as "sanitary" at all.

From time to time have come reports, official and otherwise, of the advancement that has been made, and the public has been kept fairly well informed in that respect. Many there are who have not forgotten the waggish and rather unkind intimation of a few years ago that the first health officers who went from the United States to take up the work of sanitation in Panama anchored their ship at a very safe distance from the shore and—remained on board the ship. There is no occasion for staying outside the three-mile limit now for fear of encountering a pestilence. The mortality rate among residents of the canal zone shows a definite reduction from year to year.

A correspondent of the Boston Medical and Surgical Journal states that in 1904, when the population was small, there was a death rate per 1,000 of 15;; the following year a somewhat higher rate, about 65 per 1,000, and in 1908 it had dropped to 24 per 1,000; last year, 22 per 1,000, corresponding favorably with the mortality in any of the large American cities.

Experimenting for Health in Washington Schools.

The schools often appear to be selected by those who have any sort of a fad it is desired to put into circulation as the proper place for giving the matter a try-out, and altogether too often have authorities permitted the schools to be partially diverted from their purposes in order to give opportunity to some person or some coterie to project into public observation a proposition of slight if any practical

use; but in Washington, D.C.—not hastily, but after much thoughtful discussion—the schools have been taken into partnership with the municipality in an effort to attain more beneficial health conditions. There are 60,000 children attending the Washington schools, says a contemporary, and into the hands of each of these pupils there has been given a set of printed health rules which the pupil is told to take home and, in conjunction with the parents, to put into practice. The rules are practical, intelligent and abound in common sense. They could be used anywhere by any people and be productive of good. Here they are:

Food should be taken no oftener than once in four hours. If a child is allowed to go to school without a wholesome, warm breakfast, it is done a positive injury. Food, if it is to be properly swallowed, should be thoroughly and slowly chewed. Most children are inclined to eat too much meat. If sweets are allowed only at the close of meals, and only in limited amounts, and are forbidden altogether between meals, there will be much less sickness from disordered digestion.

The growing child should not be allowed to drink tea or coffee. Children should drink water freely between meals, rather than at meal time. The more a child can be out of doors the better for health. If a child be warmly clothed and does not sit nor stand around a direct draft, there is no danger from fresh air. The best temperature in a living room is 70 degrees, and for a sleeping room 55 degrees. There is no danger from a cold bedroom.

For a child's health, nothing is more important than cleanliness. House flies and mosquitoes are active agents in the transmission of disease. The hands should be frequently washed. The entire body should be carefully washed at least two or three times a week. The teeth should never be used to crack nuts nor to break any hard substance. Food should be near the temperature of the body. The teeth should be carefully cleansed at least twice a day—after breakfast and before going to bed.

Defective eyesight increases as the children go on in school. This handicaps the child in his studies and causes many headaches. Defective lighting should be avoided in schoolrooms and home; there should be so much natural light that the eye should not be strained even on cloudy days.

Keep the ears clean by the use of soft cloths. Do not thrust any hard substances into them. If anything gets lodged in the ears consult a physician. Children who breathe through the mouth are peculiarly liable to disease.

Clothing should interfere as little as possible with the free, natural movements of the body, or with free, full breathing. Protection from dampness and wet feet is very important. Good wholesome work, bodily or mental, seldom hurts a person. But for children, especially young children, work should be broken by intervals of play. If a child worries about his work, the cause for worry should be found and removed. No child under 12 years of age should sleep less than 10 hours out of the 24, and those who are over 12 need nine hours sleep. A healthy child sleeps quietly through the night. Dreams and restlessness indicate that there is something wrong.

The Law and the Bathtub.

Harper's Weekly says that with a population of some 31,000, largely made up of Hungarians, Roumanians, Lithuanians, Slavs, and Mexicans, huddled together in small frame huts, insanitary and without any provisions for baths or running water, or even for any water at all; with as many as twenty persons sleeping in one room no more than 20 feet long 15 feet wide and 6 feet high, in a city with no public baths, public health hung in the balance in Aurora, Illinois. And these atrocious conditions existed among the foreign population through no fault of their own, but because of the unclean quarters provided for them.

With an outbreak of disease threatening in consequence of these conditions, upon taking office Doctor Reder, Health Commissioner, issued an order that everyone should take a bath at least once a week, under pain of imprisonment.

Then he framed a set of rules and regulations for the promotion of public health and had them printed on cards in the various languages of the people living in Aurora. These were posted everywhere —in every room of every house or hut occupied by the poorer classes;; ;and the people were notified that city officers

would visit their homes each week to see that the rules were enforced. This was not all. Doctor Reder compelled the property owners to provide water basins and, in many cases, bathtubs for their poor and ignorant tenants.

When Dr. Reder issued the now famous "take-a-bath-once-a-week" order Chief of Police Frank Michels started in to make room in the jail for an overflow of prisoners, but, to his astonishment, not a single arrest for failing to take a bath was necessary. So far there has not been a single prosecution and it is not likely that there will be for failure to comply with the health orders.

Towns vs. Cities.

The Boston, Mass., Globe has been looking into health statistics of towns vs. cities and finds that it is comparatively easy to collate mortality statistics for large cities, but these do not show the ratio of deaths to population in rural communities.

The supposition that towns are freer from deaths than cities, according to population, is probably erroneous. The trouble is that the returns of deaths in towns are not gathered so fully by the census agents as in more populous places.

It is generally supposed, because many very aged people can be found in a town, that the locality must be extraordinarily healthful for the residents. Cities have old people, too, but that does not alter the fact that preventable diseases are working havoc in them just as they are in towns. Until the census figures cover larger areas of population, including rural communities, it will never be known how susceptible towns are to the ravages of contagious and other disorders.

As a rule the sanitation of cities is better than that of towns. The problem, therefore, for towns is how to improve the health of the inhabitants by improved sanitation, especially in the matter of water supply and sewerage.

Notification of Syphilis and Gonorrhœa.

The California State Board of Health is taking action in regard to reporting venereal infections by the following resolution:

"Be it resolved, That the California State Board of Health declares that beginning January 1, 1911, syphilis and gonococcus infections shall be reportable and shall be placed on the list of communicable diseases which local boards of health and health officers are required to report to the secretary, it being provided, however, that until further action by this board, physicians may report the facts concerning these diseases by office numbers instead of names of patients.

"Be it further resolved, That this board officially calls the attention of the citizens of California to the contagious and infectious nature of these diseases and requests their co-operation in combating them by every available means — educational, sanitary, medical, social and moral."

We wish them success and we wonder how soon other health boards will follow their example.

Sewage Shore Pollution.

Dr. Edward Newton, of the Royal Sanitary Institute, England, argues that sewage poured into the sea results in contamination of the shellfish and the depletion of fish about the coast. The sewage, he claims, is brought back to the shore after being carried out on the ebb tide. The sewage is slightly lighter than the salt water and often warmer, so that it floats, and when the action of the waves breaks it up the heavier portions sink. The flow of the bottom water is towards the shore, and this carries back sewage material sunk in deep water. The set of the tide is shoreward and the sewage sludge is thus driven in. Dr. Newton has made certain tests, and notes that bodies thrown into the sea off the English coast at a distance of two miles have come ashore. A test of the sea water was made by Dr. Newton to determine the presence of certain bacilli indicative of sewage, and it was necessary to go at least 25 miles from both the English coast and that of France to find water free from these forms. No quantitative measures, however, are given by him. His experiment is an indication of the trend of the times and suggests that one of the important, imminent considerations that tidewater cities must take up is the treatment of their sewage before discharging it into harbors or even at the shore of the ocean.

Editorial

The President of the Canadian Society of Civil Engineers.

Charles H. Rust, city engineer of Toronto, is the president-elect of the Canadian Society of Civil Engineers for the current year. This is among the most honorable distinctions in engineering circles. Mr. Rust is also a member of the American Society of Civil Engineers, the American Water-Works Association, and the American Society of Municipal Improvement.

Mr. Rust joined the engineering staff of the city of Toronto thirty-four years ago, and in 1898 was appointed city engineer, which position he has held to the present day.

In municipal engineering, the position of city engineer of Toronto is one of the important continental posts; the work calls for high administrative abilitiy, deals with large expenditures, and implies the necessity of deciding upon an almost unlimited variety of problems.

From a public health point of view, Mr. Rust's endeavors to settle Toronto's vital question of sewage disposal and of water supply have been pronounced. For years Toronto's engineer has brought before his city council the necessity of concentrating municipal sewage at one point, instead of continuing the obnoxious practice in vogue of discharging raw sewage into Bay and Lake at various points; and in this he has at least been partly successful. Two years ago Mr. Rust managed to get a money vote for the construction of trunk sewers and a water filtration plant. At the present time the former work is being brought to so successful a completion that the whole of Toronto's sewage may eventually be concentrated at a point east of the city, where it can then be dealt with by modern methods of purification, and thus save Lake Ontario and Toronto Bay from what has been and is an unnecessary amount of pollution. The sand filtration scheme for purifying Toronto's water supply is also nearing completion · a scheme that is based upon the Hamburg system, considered by many experts the most efficient filtration method known to science.

To those who know Toronto conditions, Mr. Rust's official position in that city does not appear a sinecure; and, it is generally recognized that the engineer of Ontario's queen city has guided his municipal department with credit and honor to himself and to the satisfaction of the community whose confidence he undoubtedly enjoys.

The Typhoid Epidemic in Ottawa.

The typhoid epidemic in Ottawa is another result of sewage pollution, of drinking water. The epidemic is one of the severest that has occurred in Canada during recent years, demanding the services of Dr. Chas. A. Hodgetts, of the Commission of Conservation; Dr. J. W. S. McCullough, Chief Health Officer for Ontario, and Mr. J. O. Meadows, sanitary engineer for the Province of Quebec, to assist the local health commissioner, Dr. Law, in view of an exhaustive inquiry as to the direct source of the outbreak and the remedying of the careless conditions which probably exist in Ottawa's neighborhood. The inquiry involves a sanitary survey of the Ottawa River and it is to be hoped that the citizens of Canada's capital, and, in fact, of the country at large, as a result of this work will be relieved as far as possible from further risk of contracting a disease which social cleanliness, clearly makes avoidable.

Typhoid is the least excusable of all diseases, but reckoned by mortality, it long has laid a heavy burden upon our communities. Not only is it a long, tedious illness, often leaving in its wake lifelong disabilities, but it is also one of the most expensive of ailments. The average city of 100,000 inhabitants wastes perhaps $500,000 a year on the luxury of having it, and probably $100,000 more in efforts to avoid it. That amount of money properly spent would practically eradicate the disease. It has been done in the principal European cities, yet only of late are cities on this continent begining to cease to poison themselves and each other.

Inter Alia.

At the recent annual meeting of the adian Society of Civil Engineers, President Rust commented somewhat adversely upon the make-up of Canadian Provincial Boards of Health, saying that the Boards are in nearly every case composed almost entirely of medical men, not representative at all of engineers, and engineers have to go before these boards with plans of which they perhaps understand nothing.

Mr. Rust's remarks are apt, in regard to the Ontario Board of Health, which is at present composed entirely of medical men. A number of other Canadian provinces, however, have, we believe, representative engineers on their boards of health, or at least officially in such a position as to be easily brought into consultation therewith. And just here there seems to be no doubt from the standpoint of utility that while of necessity public hygiene finds its chief supporters among the trained medical men, each health board, as Mr. Rust points out, should be constituted on lines broad enough to include among its members those having other than medical qualifications, and more especially perhaps qualifications enabling the giving of expert advice on problems of engineering construction.

The interests involved in public health or state medicine in the present day are wider than those concerned only with the control of some communicable disease. They are concerned with the condition of workers in factories, and the condition of dwellers at home, and they take account of all influences affecting injuriously the bodily, or even the mental, condition of the population. They are particularly concerned with the daily life and work of those classes least able to protect themselves and most exposed by necessity of occupation or social condition to injurious influences. This modern development of state medicine came into being during the hundred years preceding the reign of Queen Victoria, and was made possible by three causes—the awakening of medical interest in questions affecting the public health, the development of the altruistic spirit in public policy, and the rise of and assumption of a position of numerical and political importance by the artisan classes.

Saving human life and the great health questions in general are being recognized as economic as well as medical problems. Pure water and food, plenty of fresh air and clean houses and stores and workrooms check disease. Streets easily cleaned and adequate sewer facilities are also great factors. It is only a question of money spent in prevention. In 1909 about $10,000,000 was expended on this continent in the fight against tuberculosis. Last year double that amount was spent, and during the present year even more will be raised by private subscriptions and appropriated by cities for this purpose. As a result this dread disease is yielding and is growing less prevalent. Half a century hence it probably will be completely eradicated from this country. The more money that is spent in the fight, the more quickly it will vanish. Typhoid, that was an even greater scourge than tuberculosis, does not cause half as many deaths as it did. The same is true of almost every other disease that has exacted heavy toll of humanity.

Improved health conditions in many cities, resulting in a decreased death rate and greater longevity, are the result of greater cleanliness, of better paved streets, sewer systems extensive enough to meet the needs of the people, and parks and breathing places where fresh air may be had in abundance. People living in such an environment come to take a pride in their surroundings. Civic cleanliness often leads to personal cleanliness. The man whose property abuts on a well-paved street is apt to keep that property in better condition than if it faced a street that was a mud hole in winter and a dust pile in summer. So with the person. Living in a clean city tends to breed a desire for personal cleanliness and physical well-being, and with these things come a mental and moral uplift. Disease and crime both thrive in dark places. Light and cleanliness are the greatest weapons with which we may arm ourselves in our battle with these long-time enemies of the race. This being the case, there should be no want of argument for public improvements that will result in more cleanliness, more light, more fresh air —public works that, in a word, will improve immeasurably the conditions under which we live.

Condemning a building usually means

a long fight in the courts. It is better for authorities to tell the owners of the property to keep up to a certain standard. If they refuse then simply prevent the occupation of the building. That results in stopping the rent. It won't take long before the landlords will make necessary alterations.

The wealthy man, who has surrounded himself with every hygienic and luxurious environment, but who is indifferent to the environments of the homeless and penniless man, may find that his home is next to be visited by the disease contracted in the unsanitary and unhygienic lodging house.

Medical inspection of schools means the co-operation of the school teacher and the school physician, and its object is to protect the children and the community by detecting and excluding cases of contagious disease. It aims to bring about such conditions of hygiene, cleanliness, and ventilation in the school room as will enhance the physical vigor and conserve the health of pupils and teachers. Sixteen years ago Boston inaugurated the first system of medical inspection in America. To-day about 400 cities throughout the continent have organised systems, many of which include dental inspection and special instruction on health habits.

Turning to local application, what are the steps that can be taken in any town or city or in any school to make sure that the children shall have the best advantages in these lines that our present knowledge permits? The question cannot be given a universal answer for conditions in different places are too variable. We can, however, outline half a dozen steps which may be taken by school authorities, by teachers, or by parents' associations or women's clubs to ensure that the children in their particular school shall have at least as good a chance as have school children anywhere.

The first step consists in finding out what conditions are in the schools in which you are particularly interested, and comparing them with conditions elsewhere. In order to make this comparison you need exact information as to what is being done elsewhere. This you can secure by writing to the Bureau of Municipal Research or to the Russel Sage Foundation in New York City.

After finding out what needs to be done, the next question is how to do it. The best instructions for school teachers and school doctors may be obtained from the Massachusetts State Board of Education in Boston.

The third step is to explain to pupils, to parents and to taxpayers just what these different sorts of physical defects are and why they are important. If you want to get for these purposes clear, forceful statements, telling just what enlarged tonsils, adenoids, and bad teeth are, and what they do, secure a little book entitled, "The Health Index of Children."

The fourth step consists in getting public support and co-operation. This can be done through the local newspapers. For such newspaper material, address the Department of Child Hygiene of the Russel Sage Foundation, New York City.

The fifth step is to produce real evidence from your own school, showing the importance of these matters. If all the teachers will put together at the end of the year the figures showing the difference between the promoted and the non-promoted children in regard to physical condition no further argument will be necessary to show the economic as well as the human importance of the problem.

The practicability of sex instruction has been demonstrated in certain private schools. In the State of Washington sex instruction has been made mandatory by the Board of Education. The question of its introduction into the schools is also up in several other states. School instruction is included in the courses of the high schools of Germany and France.

Hygienic lectures in our universities have caused a notable reduction of immorality among college men in the last five years. The education in the schools should be supplemented by education at home. It is either education in the home or education in the streets.

The ethical side of sex hygiene should be inculcated. The lower moral standard

among men cannot but drive out the high standard among women.

Medical factory inspection as a means of preventing the spread of communicable disease is the next great step in health work that should be taken by municipalities. In view of the fact that medical school inspection now is recognized as one of the most important features of public health work, we believe that a similar service with regard to factories, when properly organized and carried out with the right sort of co-operation between inspectors and the boards of health, would be of incalculable value to the public.

Medical inspection of factories would mean not only better sanitary conditions for the workers themselves, but better protection of their health. Such inspection would include supervision and control of the temperature, humidity, quantity and quality of air supply, the protection of all employees, especially minors, from overcrowding; protection from the known contagious diseases and also from those diseases such as lead, mercurial poisoning, naphtha intoxication and other diseases peculiar to certain occupations.

For example, in one factory in Massachusetts a medical inspector recently found signs of beginning pulmonary consumption in eleven minors. These cases were promptly reported and arrangements made for the placing of the patients under immediate treatment. The result was the restoration to health and working capacity of the afflicted ones, the protection to the employes of the factory and to the entire community from infection.

According to old time methods, the dairy was a factory for the production of disease germs. The farmer seemed to look at sunlight and air as enemies. In a dusty, musty atmosphere, germs and microbes laughed, grew fat, and multiplied after the manner of their prolific infinity.

The hide and hair of the cows would remain matted with dirt from one season to another. Stables were a hog trough, the milkman wore overalls stiff with filth. He would laugh at the effeminate farmer who should wash his hands before touching the cow's udder.

Of course, all progressive farmers have radically improved this situation. But there are others whose milk looks white enough when delivered at the door, but with whom the reign of dirt is not over.

The great trouble is that cleanliness costs time and money. Removal of filth from cattle and their quarters, the necessary laundering of the dusk suits that should be worn, adds to the dairyman's toil and to his expense bill.

The great majority of families would be willing, or ought to be willing, to pay a cent or so a quart more to get the dirt out of the milk pail. And the wide awake dairy man is acquiring such a personal fastidiousness, that he feels that dirty milk is an affront to his business honor.

He need not curtain his cow stable windows like the Dutch. But light and airy well-swept barns, and the purifying force of scalding water for his milk bottles, have become an essential to his mental satisfaction as well as a business asset.

The country is not healthier than the city in many ways, notwithstanding the prevailing impression to that effect. The production of disease is due to sanitary inactivity in the rural districts. Typhoid, dysentery and malaria are greater in the country than in the city.

Ventilation was formely of less importance in the old crack-filled houses. Now too frequently there is no system of ventilation in the farm house, though the barn may possess one.

Upon visiting a farm, the owner proudly showed us the "king" system of ventilation, and the well constructed for watering stock. But referring to the house, he said; "I have not been giving much attention to the house yet. I am just getting started." The wife got her water from near the barn.

Were we to ask the women of the country what is of most importance to them, they would reply, an adequate supply of water.

Civilization is measured, says some one, by the amount of soap used. It seems to us that it should be measured by the amount

of water used. When the measure is the kitchen pail filled once or twice a day, civilization is not far advanced.

Woman should not confine herself to her home, or her knowledge to the culinary arts. She should know all about plumbing and house construction.

Within the last few years women have rightly come to take an increasing activity in public affairs, particularly in those that relate to schools, and the general betterment of civic conditions. Under our system of franchise, the women have been confined in their efforts largely to the effect their activities may have upon the moral side of municipal and state affairs. Those of them who are convinced that this influence for good would be enhanced by the extension to them of the right of voters are fairly asking the privilege of wider franchise.

There are four factors in the fight for pure milk: the producer, the consumer, the state, and the municipality. No one of these can accomplish the object alone without the other three, and no two or three can be successful in securing pure milk without the co-operation of the others.

In prosecuting dairymen, the state officials always try to co-operate with municipal authorities, as it is difficult to accomplish results in any other way.

The consumers are largely responsible for the kind of milk, and the purity of the milk which they receive. You cannot always visit your dairyman's place, but you can see how clean his wagon is, how clean he is personally and how clean his boots are, or whether there is any manure where it should not be. By these things you can judge, at least to some extent, the kind of dairy farm which he keeps.

If it is possible to do so, you ought to take a drive sometime when you are out driving, to the dairy farm and notice whether or not the conditions are sanitary.

Often consumers want pure milk, but they are not willing to pay the higher price for it. They consider the low price of the milk and do not stop to consider whether or not it is pure or free from manure and dirt which drop into the pail during the milking.

Impure milk annually leads to the death of more children than all other causes of infantile mortality combined. The average adult has some milk or cream in his tea and coffee and as an ingredient of his food. However, it constitutes a small part of his food. On the other hand, milk is about the baby's only food, and when it is impure, unclean, laden with virulent disease-germs —or even diluted and unnourishing—it is full of danger.

All this, of course, has already been said many times. In many large American cities there are now charitable organizations to inspect the milk and provide pure and clean and hygienic milk to the infants of the poor. We have city and territorial inspection of dairies and cows and retail milk dealers, and laws to protect the consumers and the babies, and courts to enforce the laws. Society in the last decade has erected an elaborate and, in the main, effective protection against the dairyman whose ignorance or greed constitutes a public menace. Confiscation of their business—for that is what it means to order the dairyman to discontinue the sale of milk—may seem a summary way to punish them for violations of the law. And yet, in what other way are the lives of thousands of children to be protected? The police and the law and the courts would make short shrift of a merchant found selling poisoned candy or loaded pistols to little children. Why should the vendor of poisonous milk receive more clemency? Such dairyman, whether ignorant or criminally avaricious, have demonstrated their unfitness and untrustworthiness.

Recent advances in scientific cattle and hog raising have been much more rapid than in scientific child raising. The situation should be reversed to give the child a square deal. There is a crying need for education along these lines, and especially urgent is the need for such a reform in the great cities. To do this a systematic educational campaign must be started under the leadership of the medical men of the great cities.

For some time past there have been

many persons, and amongst them medical men of experience, who have felt confident that there is some connection between diet and cancer. Their researches have led them to try and find out, firstly, if a wrong diet can actually lead to the production of cancer, and secondly, if any system of diet can cure the disease once it has become established. Unfortunately, diet forms one of those subjects about which people are wont to adopt the most extreme views and the most violent attitudes towards the adherents of dietetic methods other than their own, so that up to the present much argument has taken place around this matter of diet and cancer, whilst every little really scientific research has been carried out in regard to it. There are some who say that all meat foods tend to produce cancer or conditions predisposing to it, whilst others say that a vegetarian diet neither prevents it nor has ever cured a case.

As a matter of fact, this seems to be just one of those discussions which could be quite definitely settled by a series of practical observations. Every hospital has, unfortunately, to deal with numbers of sufferers from advanced cancer for whom surgery and radium can do nothing, and who would willingly try any system of diet prescribed by the hospital physicians. So far even the most enthusiastic supporters of vegetarian and similar systems of diet, although claiming that in this direction lies the cure of cancer, have never produced a series of cases in which the diet advocated has brought about any such marvellous result. However, it is now proposed to make a definite attempt to investigate the connection between diet and cancer at two well-known hospitals, the Metropolitan and the Royal Waterloo Hospital for Children and Women in the Waterloo road, S.E., London, England. If this proposal is carried out a number of patients afflicted with cancer in an advanced stage—so called "inoperable cancer"—will be placed on a special dietary at each of these institutions, and the results carefully noted. These results will, of course, be awaited with the greatest interest.

It has been scientifically demonstrated that rats spread the plague, but a plague is peculiar, in the fact that in nearly all cases the spread is largely a matter of cleanliness. The close packing of people in communities and the ignorance of hygienic laws are the cause of plagues.

There is a profound lesson in the plague which is ravaging vast provinces of the Chinese Empire and it is a lesson which the most advanced peoples must constantly have in mind. Time was when pestilence was thought to be a punitory decree of God, against which it were impious to contend. But science has meanwhile taught us that pestilence is the inevitable punishment which follows upon neglect of hygiene and that the punishment may be stopped by removing the cause. According to the old view, the sole hope of a stricken populace lay in prayer; according to the new knowledge, the sole salvation lies in the perfect cleanliness which is the threshold of godliness.

The Chinese officials could get no help from the masses in this crisis, even if the officials were themselves enlightened enough to fight the plague in the scientific way. The government of British India is the most intelligent and philanthropic despotism the world ever saw. Yet the government of British India has more than once seen millions perish, despite a most lavish expenditure of energy and cash. For those fatalistic hordes, to whom life is at best a fierce misery, death has no terrors and sanitation runs counter to some of their most cherished beliefs. But has the Occidental a right to laugh at these childish superstitions which the most unlettered Occidental child will soon be too learned to accept? How few are the years that have passed since yellow fever was a mysterious curse, against which we could find no better safeguard than the "shot-gun quarantine." Is not the land still full of people who doubt the "mosquito theory," though that theory has been demonstrated with quite as much clearness as the binomial theorem? Have not the Occidental populations been fearfully slow to learn the lesson as to smallpox, diphtheria and similar maladies? It is easier to pray than to keep clean, and men move along the line of least resistance while they can.

Library, Laboratory & Clinic

"The Elizabeth McCormick Eskimos."—

For we have—
Cold sprays that give us
Cheeks like the rose,
Temperatures that are normal,
This our record shows.
Appetites so hearty
Our weight grows and grows.
We're the Elizabeth McCormick
Cold-air Eskimos.
That goes.

We have no doubt it "goes," especially when it is re-enforced with pictures of the "Eskimos" in their warm blanket suits in their schoolroom on the snow-covered roof of the Mary Crane Nursery, Chicago. The PUBLIC HEALTH JOURNAL has received and read with pleasure the attractive little volume on "Open-Air Crusaders," which tells of the year's work of the children in the Elizabeth McCormick Open-Air School in that city.

Most of the children whose stories are recounted in this little volume had — to put it euphemistically—a tendency to tuberculosis. But the regimen of the open-air school checked the progress of that disease, increased the weight of the children and greatly improved their school standing. The story of the "Open-Air Crusaders" of Chicago will go all over the continent to boost one of the sanest movements in school hygiene.

Sanitary Law in Question and Answer. —For the use of Students of Public Health. By Charles Porter, M.D., B.Sc., M.R.C.P. (Ed.), of the Middle Temple, Barrister-at-Law, Medical Officer of Health, Marylebone, etc. Longmans, Green and Co., 39 Paternoster Row, London; New York, Bombay, and Calcutta: It would be an immense advantage to have the bewildering number of Acts relating, casually or specifically, to sanitary law consolidated or codified, so as to afford those who have to obey them a reasonable chance of becoming aware of their existence, if not of understanding them. Dr. Porter, who has a twofold qualification for the task, being at once a medical officer of health and a barrister-at-law, has produced for the use of students of public health a handbook that at least indicates a narrow pathway through the morass, and will probably serve other uses besides those to which it is professedly dedicated. It is thrown into the form of question and answer, a method that has much to recommend it, and was at one time in universal use in educational books — as our grandparents, with reminiscences of "Mangnall's Questions," "Pinnock's Catechism," and of sundry little books on architecture, could testify. The method, though long ago discarded, seems to be educationally sound, a printed question being an unrivalled means of stimulating attention and concentrating the mind upon specific points, and Dr. Porter employs it with excellent effect. The book, although of slender proportions and low price, must have involved an immense amount of labor in the preparation; whereby Dr. Porter has earned the gratitude of all whom he thus absolves from the heart-breaking task of digesting the law for themselves. The book is of equal value to public officials entrusted with the administration of the sanitary laws, and those persons who, like architects and builders, are compelled to meet official requirements.

Brochure on American Life-Waste: A very timely and telling compilation has been prepared by E. E. Rittenhouse, of New York, devoted to "American Life Waste," showing how and where it is increasing. In the United States, it is estimated that there are more than 600,000 deaths a year that are due to preventable causes, and although it is true that these persons must die some time, still it is equally true that they might remain for a number of years longer, producing, and valuable members of the community and an asset to the state and country. On the whole, it is to be noted that in that country there is in progress a very satisfactory decline in the general death rate, which now averages, for the registration area, about 15 per thousand inhabitants. This is a decline of nearly one-quarter

since 1880, but should not be overrated in its importance. There is always the difficulty in the United States, as well as in Canada, of the lack of accurate statistics for large areas in non-census years. This is a matter that in a country priding itself on its advance in civilization, should demand popular attention and be remedied. The statistics available show that the decline in the death rate has occurred chiefly in diseases of the communicable class and the ailments of children. This, argues Mr. Rittenhouse, whose interest in the matter comes in that he is president of a life assurance company, and desirous of making the chances of living better, is due to the fact that the advances in the knowledge of disease and the education of the public have been very largely in the contagious diseases. But among the diseases of adults, including cancer, kidney and heart troubles and similar non-communicable diseases, against which no warfare has been waged, the death rate is not only very high, but in most instances is on the increase. For some of these increases, it should be borne in mind, the modern strenuous life is responsible—the greater segregation of people in crowded cities and the unhealthful conditions that attend this congested life.

"Is not the high mortality from cancer chiefly a reflection of the conditions responsible for the increasing life-waste from other degenerative diseases of middle life and old age," writes Dr. Eugene L. Fisk, who is responsible for tables and technical portions of the brochure, and he further brings forth the idea that evidence of the strongest character forces the belief that a lowered bodily resistance which invites pneumonia, apoplexy, kidney and heart disease, etc., accounts for the facility with which cancer invades and conquers the human system.

Some of the tables that are presented by Mr. Rittenhouse are of great educational value, and from such a source may be considered as bearing authority. The general death rate in the registration area of the United States, since 1880, has decreased 18 per cent. In the age period below twenty years, 12 per cent. in the period between twenty and thirty, and 23 per cent. between thirty and forty, while in later life there has been an increase in all of the periods, that from fifty to sixty showing 29 per cent., and above sixty, 26 per cent. It is not quite true that what has been saved in infant mortality has been lost in the adults, for there has been on the whole a gain; but the statement makes it very evident that having well under way a campaign to save the babies, the adults should now give thought to saving themselves.

In answer to the question, "What is being done to check loss of national vitality?" Mr. Rittenhouse sets forth the indifference of political representatives, the slight consideration paid to man as an asset as compared with the hog, and the attention paid to remote dangers like Asiatic cholera and yellow fever, and indifference towards the vital home questions, and urges that "something be done upon this subject more substantial than merely giving moral support."

"The Dawn of the Health Age," by Benjamin Moore: J. and A. Churchill, London, etc.: Members of the teaching staff of Liverpool University, England, are in the way of acquiring quite a vogue for attacking public questions in an independent spirit and from fresh and original points of view. Some time ago attention was drawn to an interesting study of bureaucracy by the professor of modern history, Mr. Ramsay Muir. Now there comes from Dr. Benjamin Moore, the professor of biochemistry, a destructive criticism of the existing public health service in "The Dawn of the Health Age," the object of the book being "to demonstrate on clear, broad lines the necessity for entirely remodelling the present system of medical science in the interests of the whole community." The lines of the demonstration may be gathered when we mention that the chapters discuss respectively how we tinker with disease instead of stopping it; the follies of our present public health service; the doctor and his patient in private practice and in state practice; our hospital systems, their evils and abuses; ;the warfare with the great white plague; and the evolution of the national medical service. There is, we take it, no indictment against medical men in general or medical officers of health in particular—rather they are represented as the victims of a bad system, which they have striven their best to render workable, but which they cannot alter. That is for the statesman, and in this connection the author points out that all politi-

cal parties are agreed that social legislation, including sickness insurance and English poor-law reform, cannot long be delayed, and argues that if such reforms are carried out on truly national lines, they will lead to the evolution of a national medical service which would save money and eradicate disease. Opinions may differ as to whether the state of affairs advocated is so easy of attainment as the author seems to think, but the book is decidedly interesting, and we may have another opportunity of referring to some of the main contentions.

New Serological Test: The new "serological test for blood," of which much has been heard recently, was lately made the subject of a very interesting demonstration at the new serological laboratories which have been opened by the Royal Institute of Public Health in London, England. By means of the new test, in medico-legal inquiries for murder and cognate crimes, postive testimony can now be given as to the human origin of blood, while a secondary, but hardly less important, value of the test is to be found in its application for the determination of the nature of the meat used in various foodstuffs. Until quite recently it has been only possible for analysts to say whether or not blood submitted to them for inspection was mammalian; and the mere layman in this sphere of human knowledge will readily see that by carrying a medico-legal inquiry one step further, and deciding in any given instance that the mammalian blood submitted to analysis had a human origin, a powerful new factor is rendered available in the resolution of problems of crimes, or in questions affecting the adulteration of food.

Simply expressed, the new serological test is as follows. Anti-human serum is first obtained in the ordinary way by the injection, or a number of injections extending over a conditional period, of human blood serum in a rabbit until a positive reaction is obtained in a dilution of 1 in 20,000. A specimen of the article imbued with a stain suspected of being blood is then subjected to the usual microscopical, spectroscopical, and chemical examinations, and this having been determined, it is allowed to soak for twelve hours or so in a 85 solution of salts. The clear extract of saline is then removed, and .1 cubic centimetre of anti-human serum added. If the "stain" be human blood, a precipitate of albumen rapidly forms. The phenomenon does not occur in the case of horse, pig, ox, or any other mammalian blood.

The recent demonstrations were successfully carried out at the direction of Prof. William R. Smith, M.D., D.Sc., F.R.S. (Edin.), by Dr. Rajchman, assisted by Mr. E. Garratt, and it was stated by Dr. Rajchman in the course of his experiments that even "mummified blood" had been successfully submitted to the new serological test.

It should be added that the London serological laboratories are an extension of the work which the Royal Institute of Public Health decided to establish in 1905, when, in view of the great importance which had come to be attributed to bacteriology in connection with the administration of the English Public Health Acts, and the necessity which, in the opinion of many medical men, existed for establishing a central institution in London, not only for the training of medical practitioners desirous of obtaining a Public Health Diploma, but where researches of a chemical and bacteriological nature could be undertaken for municipal and other authorities, the council of the Royal Institute of Public Health determined to create laboratories for these purposes. The new rooms are most admirably fitted up for the purpose.

In other directions, such as instruction in and inquiry into practical sanitation, domestic and army hygiene, the Royal Institute of Public Health continues its useful career.

Expired Air in the School Room: Our own breath is one of our greatest enemies. The problem of the school room may be to a large extent solved by the application of measures for removing the products of breathing and furnishing an abundance of pure air without the production of perceptible drafts.

A detailed and minute explanation of the air and its component parts is not necessary. We know that oxygen and nitrogen, in the proportion of one to four, are the principal gases, while nitrogen is considered an inert gas, oxygen is absolutely essential for the continuance of all forms of animal life. Expired air differs from inspired air in several particu-

harm. It is warmer, has more moisture, and contains four per cent. less oxygen and four per cent. more carbonic acid. While carbonic acid is harmful, it is not nearly so much so as the organic matter that accumulates where several children are together.

Children are especially susceptible to the dangers resulting from impure air. They are necessarily somewhat closely massed, and organic matters hanging about the room furnish favorable soil for the propagation of infectious diseases which in a purer air would soon lose their vitality. In this way diphtheria, scarlet fever and other infectious diseases are not infrequently propagated at school. Tuberculosis is often encouraged by bad ventilation and sanitation in our schools.

The evil effects of expired air in a concentrated condition have been unhappily proved in a few well known instances. In the Black Hole at Calcutta 146 persons were confined in a space 18 feet every way with two small windows on one side. Next morning 123 were dead and the remaining 23 were quite sick. Ill results are not always apparent, but it must not be supposed that they do not follow a comparatively small degree of pollution. A general lowering of strength and vigor is produced and a greater proneness to fall a victim to respiratory and other diseases.

The drowsiness and languor so frequently noticed in school children, are to the intelligent teacher indications of the need of purer air.

Yawning is a cry of the nervous system for purer blood, that is blood containing more oxygen and less effete matter. It is in the highest degree unfair to expect the brains of children to be active in their functions while they are provided with blood which is vitiated by respiratory impurities and are thus kept in a species of mental fog.

Disinfecting the Streets: Poughkeepsie, N.Y., so far as we know, is the first city to disinfect its streets by use of antiseptic water. Sanitation has made good strides in all civilized countries these past few years, but it seems to have remained for this little United States city to formulate such a plan for disinfecting its highways.

According to reports, the water used upon the streets, for sprinkling, is charged with a chloride mixture by which it is believed germ life may be destroyed. It is claimed that the solution will put an end to such germs as perpetuate infections and contagious diseases, and that it will be so greatly in the interest of health that other municipalities will take it up.

Poughkeepsie is probably not aware of the antiseptic, economic and other benefits to be derived from the use of a good road oil instead of water.

Fumigating School Pencils: A fumigating box may be used in disinfecting all school pencils and similar articles that are used by the children and yet are the property of the school. Heretofore the pencils in some schools have been disinfected by dipping them in a disinfecting solution, but a thorough fumigation with formaldehyde gas is better.

The pencils are collected each day by the teacher, put into a wire basket provided for the purpose, and the basket put into the fumigating box. In the box, which is practically airtight, is a receptacle in which is placed a few spoonfuls of permanganate of potash. At the close of each school day, after the baskets containing the pencils have been put into the box, a half gill or more of formaldehyde is poured into the vessel containing the potash. The potash causes the liquid formaldehyde to pass into a gaseous state. The box is closed tight and the pencils and other articles are thus subjected to a strong bath in formaldehyde. The pencils remain within the box until some time next day, when they are taken out and used in the schoolroom.

Barn Ventilation: We receive many letters asking for information about ventilating stables and barns.

One correspondent writes that he wants to put in sheet iron outtake flues 4 by 10 inches with an opening near the floor of the stable, such flue running up the wall of the stable to the floor overhead, then by means of an elbow pass through the wall under the sill with an opening on the outside. He asks if such flues will work.

We replied by letter asking him if his basement were full of smoke, if he thought he could get it out with such ventilators? He couldn't do it. Now, what is the difference between smoke and foul air, so far as removing it from a stable is concerned?

None at all. One will go where the other will. Both require a chimney that will draw well or neither one will be removed from the stable. The only difference is that one is visible, while the other is not.

A chimney must be high enough above the roof to get the influence of the wind from all directions, otherwise the stove will smoke with the wind in certain directions. This same principle applies to a ventilating flue. And unless such flue be raised high enough above the roof it will not draw at times and the foul air will remain in the barn.

Rodents and Gasoline: Comparatively few of us realize that the gasoline so freely used around the garage is a good disinfectant. If one stops to think of it, one never sees rats nor mice around the garage, while nearly every one knows that these rodents are the bane of every stable. It is only in recent years that we have come to understand the great danger that lurks in the spread of contagious disease through rats and mice. San Francisco not long ago eliminated rats from the stables and sewers of the city, a feat only accomplished at an enormous expense, whereas had there been no stables and only garages probably San Francisco would have had no rats.

From time immemorial London, England, has been known as infested with rats and the ridding of the city of these pests was considered impossible. Not long ago, however, the health authorities discovered that a portion of the city where automobile sales agencies, liveries and delivery departments have their garages, was entirely rid of rats and mice, and it was discovered that the gasoline dripping from the cleaning-rooms was sufficient to rid the entire sewer district of these pests.

Of course, in the private stable it is possible by vigilance to avoid trouble with rats, but among the large delivery departments probably there is scarcely a stable in the country in which there are not a certain number of rats, whereas motor trucks would eliminate them.

The coming of the garage for delivery plants also means the cleaning up of the unsightly and insanitary alleys so common in many cities.

How to Eliminate the Nuisance of the Garbage Can: The garbage receptacle is one of the commonest forms of nuisance to be found in any city. But there is a way to reduce the annoyance to a minimum.

It requires no very extensive analysis to show that the sanitary condition of the garbage can is the principal factor in determining the cost of collecting garbage. The cost of collection increases with the frequency of service. The ability of a man to collect is not the amount he collects, but the number of stops, the distance of travel and the number of cans he is obliged to handle.

The demand for frequent collections of garbage arises because of the sanitary, or rather unsanitary, condition of the garbage can. The appearance and condition of the unsanitary garbage receptacle has had more to do with making the mere mention of the word "garbage" an offense than any other one thing. When some one says "garbage" immediately there comes to your mind that same noisome garbage you can see in the back yards of so many homes throughout the country.

Garbage is almost universally described in the ordinances of cities as the animal and vegetable waste that comes from the preparation of food.

The first step in the elimination of the garbage nuisance is, of course, to provide a clean, sanitary can and then keep it in sanitary condition. The garbage should first be drained of all moisture and then wrapped in paper before it is put in the can. If this be done it will neither smell badly in hot weather, nor freeze and stick to the can in cold weather. Do this and you have a clean can at all times, instead of a fly-breeding mess of putrefaction, which you have if precautions of this kind are not taken.

It is safe to assume that if proper methods of handling garbage were adopted by housewives, the garbage nuisance would soon be entirely eliminated; the most prolific breeding place of the fly would be done away with, and garbage would not have to be collected more than once a week, even in warm weather, thus greatly reducing the cost of collection. The garbage can should be kept water tight at all times, and when not so, a new one should be provided. If the can is kept clean and sanitary it naturally follows that the garbage will not be foul in the waggon or cart, and thus the nuisance of the waggon will also be done away with.

Open Mail

To the Editor The Public Health Journal:

School Hygiene.

Sir: In studying the hygiene of schools the consideration of several questions is involved. Among these questions are the amount of time to be devoted to study at different ages, the special diseases of school children, their causes and means of prevention.

Young children should not be kept at the same study or in the same position for long at a time. The exercise should be frequently varied. Especially with children in the primary grades care should be taken not to overburden their minds with too many hours of study or too long continuance at the same exercise. Children should not be placed in school much, if at all, before the completion of their seventh year. From 7 to 9 years they should be kept at their studies not longer than three hours daily; from 9 to 12, four hours may be allotted them, and from 12 to 16 years, they may be kept at mental work five or six hours daily.

Excess of time expended in study is almost certainly followed by physical deterioration. "A little less brain, a little more muscle," is a legitimate demand that we may make of our school boards.

Gymnastic exercises should form part of the daily routine in all schools, and these exercises should take place, when practicable, in the open air. Playing, romping, laughing and singing should be encouraged rather than the natural tendency to boisterous play unrestrained.

It is especially desirable that female children should be encouraged to take part in these diversions. The desire on the part of many parents to see little girls deport themselves as "young ladies" before the time even when they write their ages in two figures, is very reprehensible and deserves condemnation.

The principal diseases incident to school life are near-sightedness, spinal deformities, nervous and digestive disorders, pulmonary and contagious diseases. By judicious sanitary measures these can all be very much diminished and some entirely prevented.

The principal causes of near-sightedness in schools are badly arranged or insufficient light, desks that compel children to lean forward while reading or writing and badly printed textbooks.

Spinal curvature is present in quite a proportion of children attending schools. Girls are affected more often than boys, the percentage being 90 to 10. The especial causes of spinal deformities are badly constructed seats and desks and an improper position of the body. Many pupils assume a twisted position, which is very liable to produce spinal distortion in children of weak muscular development.

Nervous disorders are very frequent among school children. Headaches are often due to faulty ventilation, improper food, bad digestion, and excessive mental strain.

Derangements of the digestive organs are exceedingly frequent among school children. They can generally be traced to the use of improper food. The eating of cold lunches should be discouraged as much as possible. Nuts, candies, pies, fruit, cakes and, above all, pickles, are most fruitful sources of digestive disturbances.

The germs of pulmonary consumption are frequently implanted during school life. A neglected cough, bad ventilation, polluted air, mental strain and underfeeding may be the starting point of this fatal disease.

In order to promote the proper hygienic management of schools, all teachers should be required to acquaint themselves as to the principles and practice of school hygiene. This is a demand that our school boards could reasonably insist upon, and there can be no question that the improvement in the health of pupils would amply justify the innovation.

Hygiene and physical culture should replace senseless fads and frills. Important facts concerning the common-sense care of the health of our school children are what we need.

W. A.

Plague Victims' Hair.

Sir:—The popular movement in favor

of doing away with the "rats" and other hideous contraptions worn on the heads of some ultra-fashionable women is likely to be accentuated by some recent news from Manchuria.

Manchuria, as all the world knows, is afflicted by the horrors of the plague. The death rate is something terrible. Stark, stiff, repulsive bodies of victims lie about in public places awaiting burial or cremation.

One special feature of interest in this connection is the report that the queues of the plague-killed Chinamen are cut off in almost every case.

The one and only explanation of the removal of the hair ropes from the heads of the dead is that the appendages are shipped to Europe and this continent, for use in "stuffing" the monstrosities worn on the heads of fashion's devotees.

Some of the authorities in regard to plague infection are quoted as asserting that there can be no danger of contagion from these queues, as it is held that the disease can be communicated by living bodies alone.

All the same, very few women in this country would be likely to buy and "adorn" their heads with the dirty stuff known to be cut from the dead bodies of the pestilence victims. And few will be disposed to take chances. Hence, added hope for the abolition of the ghastly, deforming headgear.

M. A. A.

Tuberculosis and the Workshop.

Sir:—We hear a good deal now about tuberculosis hospitals, fresh air treatment, sleeping out of doors in winter, the open bedroom window, and the open-air schoolroom, etc., but we have yet to hear of the open-air workshop. Here is the breeding place of the dread disease; manufacturers and capitalists are donating large sums of money towards the cure of consumption when they are at the same time turning him (or her) out by the hundreds yearly. Factories, in general, are over-heated and improperly ventilated. The factory law asks that each workroom shall have proper and sufficient means of ventilation and shall at all times be properly ventilated. Show me a steam-heated plant that is properly ventilated. There is no means provided except by opening a window, and when this is done some one is bound to close it.

If the health officer and doctors would like to walk around some of the factories in winter and see the conditions and the temperature in which men work, I think they would find that there is room for prevention as well as cure of tuberculosis.

In the majority of factories, particularly machine shops, the temperature is usually kept at 70 to 80 degrees (which is 20 degrees too high for winter), the atmosphere is dusty and smoky and every means of ventilation closed up tight. Now, if all the windows were open on the lee side, the temperature at 50 or 60 degrees, would not conditions be healthier? But there must be some one to regulate it. The foreman wants it hot, the majority of the men want it hot, yet at the same time they are sickly all the winter and wonder why.

The factory inspector comes round, and passes on; yet the law demands "a proper and sufficient means of ventilation." Cannot the law be enforced? Manufacturers will burn coal to produce steam, which costs money, and not provide ventilation, which costs nothing after once installed. They build fresh-air hospitals, which cost money, and do not look for fresh air in their factories, which costs nothing. They donate money to cure a consumptive by the very means which they could prevent with.

PRIVATE PRACTICE.

Sleeping Out of Doors.

Sir:—I have been sleeping outdoors on my back porch some six years and do not come in for zero temperatures or snow or rain. I use a sanitary folding couch and have a waterproof canvas cover which keeps the mattress dry in the day time and serves as an excellent top cover tucked in over all clothing and mattress at night. I use an extra mattress over the thin one which came with the couch. For covers, I use four heavy all-wool blankets and one comforter and over all this the waterproof cover acts as a protection from rain, snow and wind.

About ten minutes before retiring I put in two or three quart water bags. The water should be steaming hot when put into the bags. The bags of hot water keep the bed nice and warm all night. I use a wool stocking cap pulled down to the end of my nose, covering and protecting the eyes.

I was weak and sickly when I started

this game and have gained fifty pounds and am as strong as Sandow. I sleep like a child and get up in the morning with a ravenous appetite. Nothing can induce me to sleep indoors again.

A M.

House Quarantine a Necessity.

Sir:—We have neither sense enough to protect ourselves," says the chief of the health bureau of one of our cities, speaking of the public and home quarantine, "nor conscience enough to protect our neighbors."

When a case of scarlet fever, diphtheria or other serious contagious disease appears in a family, by far the best step is to send the case to a suitable hospital if one is available. Most cities have special and splendidly equipped wards for these diseases. But it is too often the case that a suitable hospital is not available. In that event, the only thing to do is to isolate the patient and a nurse, absolutely allowing no one to enter or leave the sick room except the attending physician and the health officer. Any door connecting the sick room with other parts of the house must be locked and sealed. If this is not possible because of the arrangement of the rooms, then the rest of the family should vacate and turn over the whole place to the patient and nurse. Except in instances where the arrangement of rooms and doors permits the absolute shutting off of the sick room, no inmate of the house should go to and from business or school. All clothing and excretions leaving the sick room must be absolutely sterilized before they are passed out. No sweeping should take place in a sick room; and any left over food should be burned. Patient and nurse must be equipped with cooking facilities solely for themselves; and groceries and supplies should not be delivered through the door, but deposited where the nurse can conveniently get them.

In scarlet fever the quarantine is not to be raised until the patient has ceased to "peel," and in diphtheria not until examination of the throat secretions fails to show the germs. Both diseases are very contagious during convalescence. When quarantine is lifted, the patient is given an antiseptic bath, supplied with new clothes and the room and all things in it are thoroughly fumigated, preferably with formal dehyde, which does not damage fabrics.

All this may seem extreme or unreasonable to the uninitiated, but without isolation we have no security against epidemics, and without absolute rigidity to the smallest detail we have no isolation. No good citizen can for a moment afford to oppose the enforcement of the quarantine laws, however much inconvenience it may put him to. If we all did what is possible for us to do in this regard the occasion for house quarantine would practically cease to arise.

The diseases usually quarantinable are scarlet fever, diphtheria, smallpox, infantile paralysis, yellow fever, epidemic meningitis, cholera, plague and leprosy. But in some cases even typhoid and other contagions are included.

G. S.

Trade Education.

Sir:—More attention should be given to trade education. Thousands are working in mills, factories and railroads and stores, yet very little is being done to provide an education for the children of those humble workers. Of necessity those boys and girls must have a trade education. They cannot go to high school or college. The quicker they learn a trade the better.

A health department should be the conservator of the most precious asset of a city—the health of its inhabitants. Its sleepless vigilance should detect the outbreak of an epidemic and prevent its spread. It should prevent the slaughter of the innocents through the ignorance of mothers. The plea of the Visiting Nurses' associations for more school nurses is unquestionably founded on a great public need, and it ought to be granted if it be possible.

From a mere material point of view no money is more profitably expended than that entrusted to a capable health department. Its activity lessens the annual taxes levied by druggists, doctors, and undertakers—taxes the bulk of which are paid by those least able to afford them. The worker, guarded against preventable diseases, is able to use his skill to the full for the good of himself and those who depend on him. The more liberal the health department appropriations, the greater are the gross and net earnings of the community.

C. K.

Meetings and Reports

Canadian Association for the Prevention of Tuberculosis: The eleventh annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held in London, Ontario, on May 18th and 19th next.

The Dresden Exhibition: The promoters and organizers of the International Hygiene Exhibition, Dresden, 1911, have kept their objects strictly before them, and in May of this year will open to the world a vast collection of exhibits of all kinds, sub-divided, grouped and arranged in such a way as to teach the public—the masses—elementary lessons on how to avoid noxious influences which can be avoided, and how to improve the health of the individual by the adoption of common-sense, practical measures and habits. At the same time, the achievements in hygiene in all its numerous branches will be recorded, in order that the experts attending the exhibition and the conferences may study the latest movements and may be stimulated to further advance. In brief, the exhibition will be educational and scientific, and the industrial element will only be utilized for the purpose of illustrating those subjects which cannot be exhibited in any other manner. There will be a comparatively small Industrial Section of the exhibition, at which the usual rules of exhibitions will apply.

The idea rose years ago at a meeting of hygienists in Dresden, and that city was chosen of all others because it lent itself best to the purpose. Every hygienist of note in the German Empire is extending his active co-operation by serving on one or more of the numerous committees. The work has been carried on with a lavish expenditure of money, and the German Government has instructed the *Kaiserlicho Gesundheitsamt* to take an official part, and is receiving the co-operation of most of the leading countries of the world.

Sanitary Conference: In view of the plague in Northen China, it has been decided to advance the date of the proposed international sanitary conference, and France is inviting all nations to send delegates to Paris in May, 1911, to study means of fighting epidemics.

Royal College of Physicians and Surgeons of England: It was proposed at last months' meeting of conjoint board of the Royal College of Physicians and Surgeons of England, to grant a diploma in Tropical Medicine, the conditions to resemble very nearly those which apply to the conjoint diploma in Public Health of the two Colleges. At the same meeting it was announced that among those receiving the qualification of M.R.C.S. were Pearle Jane Sproule, University of Toronto; J. E. Dewar, McGill University; H. C. Jamieson, Roy Kenney, and G. C. Kirkpatrick, of the University of Toronto.

The International Plague Commission: The International Plague Commission which is going to China at an early date at the request of the Government of that country, will be called upon, we understand, to devise measures to prevent the spread of the disease.

None of its members will be required to enter the novels where the plague exists, and, therefore, they will not be under the necessity, unless they personally desire to study intimately individual cases, to wear masks and special plague-proof clothing. The plague mask is necessary only as a protection for the physicians who are actually engaged in fighting the disease.

The Commission will probably assemble in Peking this month. It will have to start at zero, and build up from nothing the entire framework for an efficient sanitary service.

China is very much behind the modern world in sanitation. It has no system at all. It can do nothing better, in fact, to prevent the spread of the disease to the teeming millions that live in the heart of the country than station soldiers along the Great Wall to prevent the coolies who are deserting in thousands their homes in Manchuria and the corpses of their friends, possibly carrying the contagion with them

in their flight, from gaining an entrance.

The International Commission, for the appointment of which Russian pressure on the Chinese Government is largely responsible, will therefore advise China what to do and how to act. A sanitary service has to be built up in China, as it has been in India. Hospitals and stations for dealing with the plague will have to be organized, and it will be the duty of the Commission to show China how the organization is to be built up, with efficient staffs of doctors and nurses.

A system will also have to be organized for inoculating the population in infected districts; a staff will be needed to disinfect houses and clothing; and a special sanitary staff must be appointed to prevent the accumulation of dirt and to preach the laws of health.

At present the plague is being fostered by the foul air and the filth of the hovels of the people. There is no system of ventilation in these poor dwellings, and there are no open windows in these months of winter to let in fresh air. Nor is there any system of medicine, the only medicine the majority of the coolies have any faith in being in the form of beating gongs and letting off fireworks to keep away the evil spirits.

So the Commission will have to do its best to set aside the superstitions of the people as well as to show the way to the organization of the staffs and services we have mentioned. They will also have to deal with the spread of the infection by rats, mice, and other rodents, and by the fleas of these rodents that bite human beings, and so inoculate them with the disease.

Plague is a word which, by reason of its very vagueness, causes alarm. One thinks of the plague of Athens, or the plague of London, when it is reported that thousands of people are dying day by day in Manchuria, and that modern science and missionary enterprise have up till now been able to do little to arrest the progress of a ravaging disease that must burn itself out. Harbin, the dividing line between Russian and Japanese ambitions, the point at which their "spheres of influence" in Manchuria are by treaty determined, appears to be the main centre of an epidemic which is claiming a terrible toll of victims. It is not the plague in Harbin which specially concerns the world at large. It is the danger that in these days of railway communication it may spread south into China, or north into Russia. Both Governments are deeply concerned over the problem, and are taking steps—tardy as it may seem—to limit the area of the ravages of the existent epidemic. Plague, which may be taken to mean the specific malignant and infectious disease caused by the *bacillus pestis* of Yersin, feeds upon the uncleanliness which is traditional in Eastern people. It came to Bombay in 1896 and wrought a terrible disaster. It carried off thousands of victims in India, simply because the people did not know or would not follow the ordinary laws of sanitation. The London Lancet thus summarizes the situation:—

"Every circumstance unfortunately seems in favor of the spread of plague, especially if introduced in the pneumonic form. Like other countries, China has more than its share of rats and other rodents, so that there is a distinct probability if plague penetrates into the interior of China, that it will make a long stay and leave its mark on that country for years to come. . . . We have grave fears that if the epidemic goes on increasing at its present rate we may have to witness in China a sacrifice of human life compared with which even the Indian experience may sink into comparative insignificance."

The plague in Manchuria has taken the form of malignant pneumonia. When the bubonic plague invaded Bombay the pestilence spread through the whole Presidency. In four years, 1896 to 1899, it carried off 200,000 people, representing 75 per cent. of the subjects submitted to medical treatment. The present Manchurian plague is pulmonary, rather than bubonic. We read, of Harbin, that "one hundred bodies are picked up in the street every day." "Thousands," it is added, "are fleeing from the stricken centres." Dr. Graham Ashland, of the Church of England Mission, has sent to a leading New York newspaper a story of what is going on:

"The virulence of the disease is simply incredible. Men walk about and declare themselves to be in perfect health. Suddenly they develop a temperature as high as 40 deg. Cent., and in two or three hours are dead. The fatalities in the native city average 150 a day despite the decimated

population. Of these deaths, from 40 to 60 occur in isolation hospitals. The remainder are people picked up in the streets by the sanitary force."

The plague enters the body either through the skin, in which case the result is large bubonic swellings of the glands, or through the air passages, when acute pneumonia supervenes. It was the bubonic aspect of the disease which alarmed the world—and in these days of universal trading and intercommunication it is most difficult to control disease—when the Bombay plague gathered head in 1896. To-day it is the lungs which are attacked. The *bacillus pestis* seems to have secured a strong foothold in the regions in which, only a few years ago, the armies of Russia and Japan lay over against one another. The checking of contagion in a country which is infested with vermin—and rats have the reputation of being the chief agents in conveying such diseases—is obviously difficult; because the medical and missionary influence is comparatively to the population infinitesimal, and the people are by tradition neglectful and fatalistic. The danger in these times is that a plague may not be localized, and that by reason of the spread of normal communications infectious diseases of the most virulent and dangerous type may be conveyed from one part of the world to another. But every aid will be no doubt given to the natives of Manchuria by the International Plague Commission to root out a pestilence which has again and again ravaged the countries of the East, and of which Western civilization is anxious to steer clear.

Tuberculosis Day: April 30th has been set aside this year as "Tuberculosis Day," and will be observed in over 200,000 churches on this continent. The movement was started by the United States National Association for the Study and Prevention of Tuberculosis and its leaders state that they hope to enlist all of the 33,000,000 church members of that country.

The annual statistical report of the health of the British Navy for the year 1909 has been issued as a Parliamentary paper (302).

The Director-General of the Medical Department of the Navy states in his report that the returns for the total force show a continuous improvement in the general health of the Fleet as compared with the preceding five years. Not only are the case, invaliding, and death ratios for the year under review lower than the average ratios for the last five years, but the average loss of service for each person has again dropped, from 10.8 to 9.76 days. The final invaliding ratio also shows a small decrease in comparison with the previous five years' average. The total force, corrected for time, in the year 1909, was 112,700, and the total number of cases of disease and injury entered on the sick list was 72,540, which gives a ratio of 643.65 per 1,000, a decrease of 75.34 as compared with the average ratio for the preceding five years. The average loss of service for each person worked out at 10.36 days for the year represents a decrease of 1.04 in comparison with the average for the preceding five years. The ratio per 1,000 of men sick daily on the various stations was 26.75. The Cape of Good Hope showed the lowest sick rate, and as in the preceding four years, the Irregular List shows the highest. The total number invalided was 2,007, which gives a ratio per 1,000 of 17.8, a decrease of 4.3 per 1,000 in comparison with the average ratio for the preceding five years. Of the 2,007 invalids, 1,851 were for disease, and 156 for injury.

The total number of deaths was 362, giving a ratio of 3.21 per 1,000, a decrease of .54 in comparison with the average ratio for the last five years. Of this number 258 were due to disease and 104 to injury. The total number of days' loss of service from venereal diseases was 325,889, while the average daily number of men ineffective from these diseases was 892.84, as compared with 889.15 in 1908 and 903.9 in 1907.

In addition to the usual statistical tables there are appendices dealing with cases of caisson disease, tests for color vision, the examination of eyesight at gunnery schools, the outbreak of beri-beri on board the Sphinx, and other matters.

Staff-Surgeon A. J. Laurie, in dealing with the outbreak of beri-beri, suggests, from certain facts which have come under his observation, that copper poisoning, due to the tinning being allowed to wear off copper vessels, may be the cause of the disease.

The annual meeting of King Edward's Hospital Fund for London, England, was

held last month in St. James' Palace, under the chairmanship of the Duke of Teck. The object of the fund is the attainment of uniformity in benevolent activity and the checking of waste and overlapping in the administration of hospital charity. The amount on hand for distribution was announced as £155,000, over half a million dollars, a sum exceeding by £5,000 the largest amount ever previously available.

Commenting upon the object of this fund a contemporary remarks that it is perhaps admissible, after all, to utter a word of caution lest the desire to organize and to control should be carried to an undue extreme. A hospital is, or should be, a living structure, with some definite individuality of its own; and it might well happen that an absolute uniformity of administration might only be attainable by the sacrifice of characteristics which it might be well to preserve. A great London hospital is not a hospital merely; it is St. George's, or Guy's, or St. Bartholomew's, and as such has characteristics which have endeared it to many generations of supporters, and which wise administration would spare no pains to preserve. It seems that some of the incidents of the working of this fund have occasionally tended to strain the loyalty towards it of the institutions which it was established to strengthen and to support.

British Columbia proposes to provide for inspection of logging, railway and other similar camps, sawmills, etc., and other places where labor finds employment, and to deal with the necessity of providing medical attendance for those engaged in such isolated works as advancing railway construction, and with supervision of the construction of camps by the government's inspectors, so as to assure sanitation from the outset of camp establishment. The measure will add this additional work to the duties of the Provincial Board of Health.

An Antitoxin Trial: According to report, some cures of certain forms of tuberculosis and pneumonia have been made during the last month at the Southern Pacific Hospital in San Francisco, where a serum treatment has been applied. This report, however, is not sufficiently in detail for an intelligent discussion.

There are two kinds of specific treatment which have been recognized in tuberculosis. One is the use of tuberculin, which was intended as a toxin to stimulate the production of protective substances.

The other treatment proceeded upon the principle of the antitoxin treatment for diphtheria, a serum being obtained from immunized animals to combat the disease. The Maragliano serum belongs to the second class, but has not yet demonstrated its efficiency, though it has its defenders as well as its critics.

Apparently the treatment used at the Southern Pacific Hospital belongs to the second class.

The Rev. John Williams Cavanaugh, president of the Notre Dame University, of Notre Dame, Ind., tells some amusing stories in his talk on "The Educational Philosophy of an Ironmaster." The Rev. Mr. Cavanaugh relates an incident that happened to some little birds whose mother had deserted them. An elephant came along and happened to see the nest. The birds, being young, were unable to fly and told the elephant of their plight, saying they were hungry. The elephant told them not to worry, that he would look after them, then clumsily sat down on the nest.

"That," says Rev. Cavanaugh, "is what we will do to the unfortunates if we do not wake up to the realization of the fact and help them to become self made."

He also asserts that a father is inhuman when he tells his son that what was good for the father is good enough for the son, and says that possibilities for great men often are shattered with just such advice. He cites the cases of Harry Thaw and his counsel, Martin W. Littleton. Thaw was raised in the lap of luxury. Every thing he desired was his and he was not allowed to broaden his mind on the greater problems of life and naturally fell into a life of crime. Littleton was raised on a farm. Everything he got he worked for. He did not know the pleasures of life until he was a grown man and his mind developed into one of great activity.

He is a wise physician who practices to prevent as well as to cure; assisting nature to operate with her balsams which are principally fresh air, then pure water and unadulterated food, and a cheerful mind —*Anon.*

DOCTOR PAUL EHRLICH,

Frankfort, Germany, whose discovery, at his 606th experiment of a preparation apparently specific in certain cases of Syphilis, was partly the result of a grant of money from the Rockfeller Institute for Medical Research, the promiscuous exploitation of which is deprecated. —— See Page 170

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Special Articles

THE CONQUEST OF GREAT DISEASES

By WOODS HUTCHINSON, A.M., M.D.

The most cheering feature of the medicine of 1910 is that there is so much less of it given, whether patent or prescribed. Seldom has our faith in the magic power of drugs waned as during this decade.

The great medical investigations of the decade have been for the discovery of causes; the great advances are in methods of prevention. The great new national and international organizations formed have been against tuberculosis, against infant mortality, against congestion and overpopulation; and for school hygiene, for health in factories and workshops, and for wholesome conditions in cities.

Better and more significant yet, these movements (though largely inspired and led by physicians) are of the people, by the people, for their own protection. The community is awakening to the fact that its fate is in its own hands, and that the best medicines are neither physic nor prayer, but food, fresh air, sunshine, pure water, and personal cleanliness.

Let in the light everywhere and make every man, as Diogenes requested Alexander, keep out of his brother's sunshine. Health has become a moral question. Disease is recognized as a symptom of social injustice.

The death rate from tuberculosis in America has declined 10 per cent. in the decade. The infant mortality rate is falling at an equally rapid rate, which means the saving of thousands of babies annually from those Herods of the twentieth century —the little fevers of childhood, the dirty milk, and overcrowding. The death rate of all of our great cities is being steadily beaten down to a lower and lower level every year.

The fight against tuberculosis is steadily becoming more and more a fight for better housing, more playgrounds, better food and more of it, shorter hours of work, decent and civilized shops, workrooms, and factories, higher wages, better education in the laws of health.

We are concentrating our fire upon the place where the bacillus breeds — the infected house or tenement room. The place where we look for new cases of tuberculosis is in the same house with old ones. We must break this link in the chain if ever we are to wipe out consumption. From 30 to 50 per cent. of the children in the tenements living in the same household with a case of tuberculosis are found to be al-

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ready infected with the disease.

Whenever the community becomes intelligent enough to vote the money for taking every case of known tuberculosis out into the country, and keeping it there until cured—and at the same time preventing the infection of others—then the days of consumption will be numbered, and its years may be counted upon the fingers of the two hands.

The great discovery of the decade has been the skin tests of Calmette and von Pirquet; by simply scratching or rubbing a little tuberculin into the skin, a reddening or reaction is produced which enables us to discover the disease at the very earliest stages, when it is as curable as measles, and long before it has become infectious to others. With the aid of this test we can now break up each nest of the disease, every focus of infection, as fast as we discover it. We can stop our present practice (as illustrated in New York City) of burying 10,000 cases of the disease every year, but breeding 20,000 new ones to take their place—which means that each case before it died infected at least two others.

Our best new weapon against the next deadliest captain of the men of death, typhoid fever, has been the discovery of the powerful aid and comfort in his murderous attacks given by that advance agent of pestilence, the house fly, which should be known as the "typhoid fly" or "filth fly." This pestilent insect breeds and revels in dirt and feeds on the same food that we do; indeed, we sit at the second table to him. No more efficient agency for the transmission of infectious filth of all sorts could have been devised by the most ingenious imagination. He is a perfect joy-ride automobile for bacilli of all sorts. Next to infected water (which our modern systems of public supply are now, fortunately, beginning to get under control) this insect is probably the leading cause of the spread of typhoid fever; as well as responsible for nearly half of the summer diseases of infancy. As the fly breeds only in household and barn-yard filth of human production, strict cleanliness will exterminate him entirely.

He is the deadliest wild animal, the most ferocious beast of prey, that the human species has to contend with; he destroys more human lives every year than all lions, tigers, wolves, and venomous serpents put together. We always did hate a fly; now we know why.

The war against insects and vermin of all sorts has been one of the features of the decade. The deadliest enemies of the race are bugs and bacilli—the "big bugs, and little bugs upon their backs to bite 'em."

The word has gone forth that not merely must the typhoid fly be destroyed from the face of the earth, but also the stegomyia mosquito that carries yellow fever, the anopheles (his cousin who transmits malaria), the tsetse-fly that carries sleeping sickness, the rat that carries plague, and the mouse that probably carries measles and typhoid fever. It is barely ten years since those martyrs of science, Carroll and Lazear, proved by laying down their lives that yellow fever was carried by the bite of a mosquito. By use of this knowledge, yellow fever has been practically exterminated in Cuba, in Panama, and in other parts of the West Indies and Central America. Our continent is now practically safe from those successive waves of this pestilence which in the last century totaled half a million cases, with 100,000 deaths in the Southern States. The only epidemic that has since attacked New Orleans was stamped out in less than half the usual time, and with one-tenth of the usual mortality. The tropics are now open to white colonization for the first time since the dawn of history.

Even pallagra bids fair to fall into this insect-borne class, as the latest investigations (both American and European) unite in showing the baselessness of the belief in its causation by spoiled corn, thus refuting a slander upon our greatest crop, and the strong and increasing probability that it is due to the bite of a gnat or midge (simulium) whose activities in the early spring produce the well-known seasonal outbreaks or relapses of the disease.

Another famous discovery of the last decade is that of the notorious hookworm. It is simply appalling to realize that probably from 15 to 30 per cent. of the rural population of the Southern States of America are constantly inhabited by this parasite. But since it is as curable as it is common and can be prevented by the most rudimentary improvement of sanitary conditions, we may congratulate ourselves upon the enormous addition to the happiness and economic efficiency of that section of the

country which can be so readily and inexpensively secured. Twenty-five cents worth of thymol and a day in bed will cure the disease. Shoe-leather and properly built privies will prevent it.

The two most powerful weapons forged in the decade for the direct cure of disease are the serum, or antitoxin, for the cure of cerebro-spinal meningitis; and the discovery of the germ of syphilis. Both of these were due to the utilization of our nearest blood-relative, the monkey, for experimental purposes.

The first discovery is an American triumph, made in the Rockefeller Institute of New York, and has given us our first real remedy of any efficacy against the deadly "spotted fever." Its use in some seven hundred cases has already changed a death rate of more than 70 per cent. into one of less than 25 per cent. This means that, when the remedy is produced on a commercial scale so that it is readily accessible everywhere and can be used in the early stages of the disease, the death rate will probably not exceed 10 per cent., or one-seventh of its present fatality.

The other really great discovery, that of the organism of syphilis (the spirochete or pallida) was made barely five years ago by the brilliant investigator, Schaudinn—whose monument, alas! is already erected, he having died in the first flush of the triumph of discovery. Though the time since its discovery has been so short, it has already yielded results of the profoundest and most far-reaching significance. It has provided us with a most valuable and reliable positive test, first, of the existence of the disease in a particular patient; second, of the fact whether he has, or has not, at any time during his life suffered from that disease; third, of the completeness of his cure and of the time at which the cure is complete and it is safe for us to discontinue our remedies, and approximately when it is safe for the individual to marry.

These are secured by a special method of testing the reactions of the blood, known as the Wassermann test. This test and the skin test for tuberculosis furnish to those interested in race improvement, or eugenics, practical tests of enormous value, free from any objection on the grounds of pain, danger or sense of shame, for the presence of these two great blood taints.

As soon as we knew just what our enemy was in this disease, we began to forge weapons specially for his destruction. All over the world, the laboratories fell to work on this, and have already turned out two destroyers of great promise. One, if applied in the earlier stages of the infection, will cut short or abort the attack; and another (announced by Ehrlich only a few months ago), an arsenic compound, has already been shown to be able in some cases to destroy all the specific germs in the blood within 48 hours, and to produce visible improvement in the condition of the patient with 24 hours. Its name, "606," indicates the inexhaustible patience and perseverance of the search. One such success is worth not merely 605 but 6,005 failures. This and the Wassermann test make it for the first time practicable to report and isolate syphilis till cured, like any other dangerous infection.

In surgery we have the brilliant, though somewhat bizarre, possibilities opened up by the magic feats of Guthne and Carrel in transplanting the organs. Animals have already lived for months in perfect health and comfort with one of their most important vital organs (like the kidney) removed and the kidney of another animal stitched in its place. Whether we shall ever be able to acquire a new heart, without being converted, or a more satisfactory and up-to-date liver by this process, remains to be seen. But the actual results obtained already open up an interesting vista of speculation.

MONOPOLY IN EDUCATION

By ALFRED FITZPATRICK, B.A.

There are signs that education is beginning to look out from her long retreat in academic shades and college groves to the kitchen, farm and workshop. Among the subjects of school and college curricula we now find Dairying, Agriculture, Domestic Science, Hygiene, etc. We are beginning to realize with Browning that

the body, God's temple, has as much to do with our mental and spiritual growth as have the mind and soul.

"Nor soul helps flesh more now
Than flesh helps soul."

—*Rabbi Ben Ezra.*

The dining hall at the University of Toronto has lately sprung into sudden popularity. Three hundred students take their meals there now, and frequently the S. R. O. sign might be hung out. Why this sudden popularity? Modern science has come to the aid of the Varsity student and placed the dining hall under the supervision of a Domestic Science graduate. Under her regime the meals combine quality, variety, cleanliness and cheapness.

ALFRED FITZPATRICK, B.A.,
Superintendent of Camp Education.

Let us hope that a system of education whose natural laboratories include the farm and kitchen cannot long be denied the frontier camp.

"Jumping camp" would be greatly reduced if the culinary staffs at the camps were experts in their line. But to add the additional blessings of bathrooms, and private instead of public beds or boards as now in use, at say quarter the expense of students' residences, and instruction with books, music, entertainers and instructors, would be to bring the term "jumping" altogether into disuse. It would have no meaning. There would cease to be any such habit as jumping known. The back country hotels and the city slums would be deserted. You would not be able to keep the unemployed away from the camps with jamdogs.

In other words, to decentralize education from its congested stultified centres to the frontier camps and settlements, to make the super-educated lend a hand at teaching and toiling, would be to take the first step towards making possible a solution of the slum problem of the cities, and the absolute suppression of the liquor traffic on the frontier as well as in city, town and country. For just as surely as nature abhors a vacuum, just so surely will men seek to fill their monotonous spare hours with coarse and brutalizing stimulants even if they have to be illicitly obtained, unless these hours are first filled in with the pure and the beautiful.

Do you, kind reader, suppose the frontier toiler would leave camp where his bunk was in no danger of being "seeded" from his neighbors? Where if "struck" he could have a hot bath and change his underclothing in private? Where he does not have to toil more than eight hours and could spend the balance of the day in reading and study and, above all, where he could come within the hallowing restraining influences of good women?

Is there any hope that the frontiersmen whom a recent writer has aptly styled "God's frontiersmen" will ever come into his rightful heritage and be so educated?

Thank God, in Canada a majority of our citizens are educated normally. That is, their hands and hearts have been educated as well as their minds. But, alas, there still persists, though less pronounced, the old distinction of philospohic dreamers in our universities more or less out of touch with practical life, who know of no useful occupation as an outlet for their exuberant energy other than sports and hazing. Though proportionately fewer in number, they have many of the characteristics of the larger class of the Middle Age of which they are the logical descendants. Like them, they vainly try to do the thinking for the toilers at the other extreme, the descendants of the illiterate and more or less brutal slaves. These universities,

seminaries and schools fit not a few young men and women for positions that do not exist and land them helpless in the pulpit, at the bar and surgeon's table with little skill or practical experience, less common sense and undermined physiques.

Who is to blame that the old division of society into educated and refined, out of touch with life on the one hand, and the illiterate and vulgar toilers on the other, still persists, though, of course, to a diminishing extent?

Are the employers the chief sinners in this respect? Are they to blame that some of them treat their workmen as they do their horses, that is, feed their bodies only and never think of their minds? Are they to blame that they have no modern scientific methods of curing food and preventing disease, no baths, no privacy and make very little attempt at cleanliness, their men being huddled together in common sleep camps and bunk houses? Are they to blame that they have no teachers and entertainers, no good, scientifically trained feminine hands to prevent as well as cure disease of mind and soul and body?

No! Not wholly nor chiefly. We, the people, are to blame first and our representatives afterwards. Had it not been for the Godsend (Nature's warning) of an occasional outbreak of smallpox, diphtheria, and typhoid, and that the public feared an undertow that would endanger themselves, the employers and men might have gone to the devil for all the interest a large section of the public takes in the housing and sanitation of the camps or the education of the men. An occasional missionary visits the camps nearest civilization, but leaves no atmosphere or soil in which the seed he sows can have the slightest chance to grow. The church universal is our greatest and best institution. It means well and deserves credit, but the little work it does at the camps is love's labor lost. The missionary might as well save his elbow grease to sow the seed where he usually does on intensively enriched and cultivated soil, or, better still, fence and break up the fallow ground of the frontier and keep out the cattle and counteract the summer frost before he sows the seed.

After even the most eloquent sermon or the longest mass, the poor bunkhouse occupant is forced to lie down just the same beside a "crummy" bunk and get "hit." He longs in vain for a chance to get a bath and for privacy to change or even pick his underclothing. Shame on our vaunted civilization! The priest or preacher may have made a rift in the clouds that let a ray of light into the heart of a benighted hearer. He may have struck divine chords and awakened heavenly longings, but in vain his convert longs to get away from the filthy song and story of his depraved fellows, and in this the sermon or mass offered no respite. Just the same, for a bath and a change of underclothing he is forced to jump camp and just the same he blows his stake. Because not even scarecrowed, birds by the wayside picked the seed that lay bare on his rocky heart, and because unfenced, what few grains may have found root in the clefts of the rocks, the bears and neighbor's cattle ate part and trampled the rest beyond recognition.

But the seed sown in the hearts of our Varsity boys luxuriates in soil and atmosphere and the only drawback is that there may be insufficient storm to stiffen the tender blades, freshen the air down by the roots and kill the harmful insects and germs. The plants savor of the hothouse. By spring exams the faces of these more than semi-recluses are pale and their muscles so lax that they are unfit for manual labor.

They enjoy the most wholesome food in all our fair land, the most sanitary and scientific cooking and the best educated cooks. And all for less than fifteen cents a meal! Sluices and skidways! Wait a minute. How, why and wherefore only fifteen cents? That is the sum the students pay. Therein lies the rub. They don't pay the total cost. They eat this fare fit for a god and provided by goddesses at the expense of someone else? Of whom? Tell it not on the tote or cache road! Miss Ryley is paid not by the students who enjoy and thrive on her golden kaleidoscopic menus, but her salary is paid by the university, just the same as that of any other professor. It may be added that the heat, light and building are also free to the students.

But slushers and stationmen's huts! where does the university get the money? Wherever it gets it, the money could not be put to better use. The university that affiliates an institution like the Lilian Massey School of Domestic Science, and makes its courses optional as part of those required for the regular B. A. degree has the

right amount of red hot sand in its runner tracks and need not fear the steepest sand hill.

But why should this free instruction in cooking, sanitary science, literature, etc., end with our universities? Are our frontier toilers not entitled to the inspiration of Emerson, Wordsworth, Carlyle and the humor of Mark Twain, as well as the recipes and charming wholesome presence of educated teachers of both sexes? Spare the differential calculus and the twelfth book of Euclid, but by all means teach the pathfinders of our great common heritage how and what to read and eat to live.

So far as food is concerned, the ordinary camp is much better than the average boarding house, notwithstanding that the employer of frontier labor has a much more difficult task to transport and keep his supplies in good condition than the restaurant keeper or college boarding house. Besides, his cooks have never studied Domestic Science or had he any kind Government to pay the salary of a graduate of such a school to supervise his cook camp and instruct his cooks.

The attitude of those employers of labor in our frontier camps to the experiments in education we have made convinces us that when the proper agencies, the Provincial Departments of Education, undertake this work they have so long criminally neglected, they will meet with the heartiest co-operation on the part of 99 per cent. of these employers. The Reading Camp Association, at least, has nothing but kind words to say of those employers of frontier labor who have co-operated with its secretaries and instructors in what, at least, at first appeared and may appear to some even yet to be a doubtful experiment. The Association takes this opportunity to cordially thank all who have not only permitted us to operate reading tents, cars, camps and night schools, but who have also given assistance and added words of encouragement.

But are these same humane manly employers and a thousand others not entitled to expect not only the co-operation and assistance of an association such as ours in a work that interests the public generally, but that the institution of government that exists in the main for the education and betterment of all the citizens shall do its duty towards the men in their employ on the frontier as well as to the stay-at-homes?

And are these brave work soldiers in peace, who are also always volunteers in war, constituting as they do, a great army equal to the population of Montreal or Toronto, who have gone out and taken their lives in their hands to do the rough dangerous work of building our highways of commerce and intercourse, who man our fishing and traffic fleets, who mine our ore and make the wilderness rejoice and blossom as the rose —are they not entitled to expect that a fair amount of the revenue they so substantially help to produce shall be spent on their education as well as on the city, town and country dwellers and "land lubbers?"

Entitled? "Sure!" to use the frontiersmen's favorite affirmative. Take the Province of Ontario, for example, and let us see whether we in "civilization" have not been degenerating and demoralizing ourselves by accepting charity at the hands of these brave fellows whom we despise and ostracize after we have made them drunk and penniless by our dishonesty and neglect. Let us see whether the lumberjacks of this magnificent empire-province are not entitled to not only instruction in the three R's afforded by the public school, but also the services of our best teachers, musicians and other entertainers as well.

The city of Toronto, for example, has a population of about 345,000, approximately equal to that of the frontier laborers of Canada.

The following table shows the amount spent by Toronto on property for church, educational, charitable and entertainment purposes, and the cost of maintenance of these institutions for one year:

	Value of property.	Cost of maintenance for one year.
Church property	$16,000,000	$ 600,000
Educational property for city exclusively: public, separate, high and technical schools, and public libraries	3,470,000	1,631,505
Toronto's share of amount invested in educational property situated in the city but not exclusively for Toronto's citizens, e.g., the University, Knox College, Wycliffe, St. Michael's, McMaster,		

Business colleges, etc. ..	2,133,333	600,000 (Toronto's share)
Charities and amusements	10,500,000	1,750,000
	$28,103,333	$4,661,505

An investment of $28,103,333 and an annual expenditure of $4,661,505 for Toronto's 345,000. How much for the 345,000 in the danger zone? A mere bagatelle.

But someone may ask, "Why should we worry about the frontiersmen?" Let us look at the matter not from the point of view of philanthropy or religion, but of cold justice.

What proportion of this does the Ontario Government pay towards the education of the people of Toronto?

Amount Spent by Province on the Education of Toronto Citizens in 1910.

On public, separate, high schools, public libraries, superannuated teachers	$ 59,895
Toronto's proportion of amount spent on the University, 3/20 of $519,999	77,999
Total	$137,894

It will be seen from the following table that the provincial revenue from woods, forests and mines is nearly one-third, and the revenue from woods and forests alone is over one-fifth of the total revenue. The amount spent by the Government on education in the province as a whole, or, to be more nearly correct, mainly on the education of the people in organized districts, reaches the very creditable sum of $2,718,017.

Province of Ontario, 1910.

Total revenue	$8,891,004
Revenue from woods and forests	1,835,082
Revenue from mines	918,508
Total from woods, forests and mines	2,753,590
Total amount spent by the Government on education in the province	2,718,017

Is it fair that the older parts of the province should have the lion's share of the public revenue?

Of course, the timber and minerals belong to the province as a whole, but they would be of absolutely no use to the present generation, and the former would be destroyed by the ravages of time and fire were it not that our strongest and bravest young men exploit these great industries, exploit them by lives of hardship in rain and storm and solitude, by the deadening, unmanning monotony of a mental and spiritual vacuum, by exposure to men of filthy habits of body and mind, and the absence of bathing and other facilities necessary to cleanliness and self-respect.

It is true there is a statute in Ontario (1 Ed. VII., Cap. 34), providing for bath rooms at all public works in unorganized districts, but for lack of interest to enforce it on the part of old Ontario, it is practically a dead letter.

Toronto's 345,000 get $137,894 annually out of the public revenue for their education. The older parts of the province, including Toronto, get $2,718,017. What do the frontiersmen get? Next to nothing. And yet the latter earn a proportionately very much larger share of the public revenue than the former. We would be angry if told we received charity at the hand of the frontiersman, and yet is it not so? By a life of filth and disease, of physical and mental and spiritual bondage, as also by his untimely death, the frontiersman helped to pay for your education and mine

Every man, woman and child in Ontario who can read and write, everyone who ever borrowed and read a book from a public library, every High school and college graduate received a substantial part of these blessings from the hands of those who pour this $1,835,082 annually into the provincial treasury.

Were the woodsmen to get their share of this amount, we would not be receiving charity from them, but so long as they are denied this, we are not only receiving charity at their hands, but we are committing a crime.

Is there not a danger, too, that we are stultifying ourselves with good things? Would our blessings not become sweeter and larger if the boys on the frontier got their legitimate share and would we not become less introspective and morbid, healthier and happier by so sharing them?

If we would build up a great nation within our God-given empire, the greatest and best empire ever given to men, we must educate the foreigner, and the only place to reach him is at his point of contact with our industrial civilization, the frontier camps and settlements.

I charge civilization with the crime of the desertion and demoralization of the

frontiersman; the crime not only of depriving him of a right, not a charity, he has so nobly earned, the right of an education, and the equally damnable crime of licensing men and institutions to degrade him.

Shall we not hereafter try to atone for these crimes, make the toiler less of a beast of burden and more of a man, close the bar and open the school?

WHAT A DENTIST MAY DO FOR HIS PATIENT

By W. A. BLACK, M.A., D.D.S., Toronto.

Doctor Osler, asked once which was the most dangerous to life, alcohol or bad teeth, replied bad teeth. With the progress of science in recent years the field of the dentist has widened materially and the importance of his work for the social economy and well being of the community become more highly appreciated by the public.

Formerly, the reputation of a dentist depended upon his ability to extract teeth and replace them with artificial ones. Now, the skilful dentist is one who, by restoring and building up defective and diseased teeth, renders extraction unnecessary. It is said the highest art is to conceal art. This is especially true in dentistry, and the aim of the dentist should be to replace or repair the masticatory apparatus with the least appearance of artificiality in the mouth of the patient.

The practise of dentistry presents a two-fold aspect. It is both mechanical and medicinal. That is to say, the mechanical part deals with the preparation and filling of cavities, the restoration of teeth by crowns and bridges or by artificial dentures (plates) and the scaling of teeth for prophylactic treatment. On the other hand, the medicinal part deals with the treatment of pathological conditions as found in the oral cavity.

Formerly, possibly the mechanical side of dentistry was over-emphasized, but in these days of science and research the medicinal aspect is receiving greater attention. Modern dental science deals not only with local conditions which present themselves in the mouth, but seeks to discover the general systematic cause of which the pathological condition is the effect.

We are told that the mouth stands at the gateway of life and health. If this be true, how important is the condition of the teeth and the soft tissues of the oral cavity to the general health and comfort of the individual. There are many cases of inflamed tissues in the mouth due to a disordered stomach and conversely, a general pathological condition such as facial neuralgia, or even insanity itself, may be traced to some defective or impacted tooth in the mouth of the patient.

We will now consider more specifically the duties of the dentist. First of all, he must keep his instruments clean and sterilized, and in the second place he must be scrupulously clean himself. The work of the dentist is becoming more and more *preventive*. The patient should be taught the proper use of the tooth brush, a suitable tooth powder recommended and mouth washes, if necessary, prescribed for the gums and soft tissues. The importance of frequent examinations by the dentist should be considered, and the necessity of good teeth, a clean mouth and proper mastication, impressed upon the patient, if he would have a healthy stomach and immunity from disease. So many diseases, such as tuberculosis, scarlet fever, diphtheria, tonsilitis, mumps, etc., gain entrance to the system through the mouth.

Before a child is three years of age, all the temporary teeth are in position. These are twenty in number, ten in each jaw, and are intended by nature to be kept by the child until the permanent teeth are ready to take their place.

Some people ask, is it worth while filling and saving the first or temporary teeth? The reply is positive. By all means, they

should be filled, if defective, and kept in good condition. It is, if possible, more important that the child should have good teeth than the adult. This is necessary for several reasons. First, the child must have its food thoroughly masticated in order that the digestive organs may not be overworked and assimilation and nutrition interfered with during the period of growth and development. Many a child is stunted mentally and physically by neglect of the temporary teeth. Second, for the sake of cleanliness and protection from diseases, which may enter the system through diseased and defective teeth. Third, for the sake of the permanent teeth, the development of which is seriously interfered with, when the temporary teeth are lost prematurely. Fourth, they are necessary as a guide for the proper position of the permanent teeth. Fifth, for the comfort of the child, and, sixth, for the sake of appearance.

The temporary teeth are normally all shed when the child is ten or eleven years old. The permanent teeth are thirty-two in number, sixteen in each jaw. The first of the permanent teeth to appear are the lower centrals and laterals, while about the same time, the first permanent molar (two in each jaw) come into view immediately behind the temporary teeth.

For the very reason that these molars appear so early while the temporary teeth are still in position, they are often mistaken for temporary teeth, and therefore considered of little importance by the parents, so no special attempt is made to preserve them.

These, in fact, are the most important teeth in the mouth. They are not only the largest, but are the keystone of the arch; serving as guides for the proper position of the teeth to follow. The bicuspids (four in each jaw) are in place usually at eleven and sometimes much earlier. The second molars are the next teeth to erupt. They appear about the twelfth year and when the jaws are fully developed, the wisdom teeth (third molars) come into position, if there is sufficient room for them.

The teeth of the patient should first of all be cleaned (to use a common expression) by the removal of all stains and deposits found around the necks and surfaces of the teeth.

If there are irregularities, due to abnormal conditions, such as adenoid growths in the posterior nares (and, hence, mouth breathing) or others due to thumb sucking, these should be attended to as soon as discovered, before the patient has reached adult life. Regulating appliances should be used and the teeth put in their proper relationship to each other. This is necessary not only from the æsthetic standpoint, but because of the greater susceptibility to decay, due to the difficulty of keeping the teeth properly brushed and also because of the serious interference with mastication, ending in poor nutrition and an anæmic condition of the patient. In fact, so important has this branch of dentistry become, that we have dental specialists (orthodontists) who devote their entire time to this important work.

If there are cavities, these should be filled. For the temporary teeth, oxyphosphate cement or amalgam are chiefly used for the posterior teeth, and oxyphosphate cement or artificial enamel fillings may be inserted in the anterior teeth. For the permanent teeth, there is possibly a greater variety of filling materials to choose from. Gold is desirable for posterior teeth, if it can be inserted in the form of a well-fitting inlay, and hermetically sealed in the cavity by a lining of cement. Large gold foil fillings have been superseded largely by gold inlays. Amalgam or alloy fillings are undoubtedly the most commonly used for posterior teeth, and in the hands of an ordinarily skilful dentist excellent results are obtained. The writer saw recently an amalgam filling thirty-five years old, and it was still rendering good service in the mouth of the patient. These two classes of fillings may be regarded as permanent fillings as compared with cement fillings, which the fluids of the mouth tend to dissolve and wash out. They are used, therefore, only under certain conditions.

For the anterior teeth, gold is the ideal filling, as far as permanency is concerned, but in many cases, its appearance is unsightly. Porcelain has a limited use for several reasons. First, the difficulty of obtaining an exact shade. Second, its great friability where thin surfaces or edges are concerned. Third, the greater expense due to the skill required and time consumed in manipulation and baking. Fourth, the danger of discoloration around the margins after the cement has been partially dissolved out by the fluids of the mouth. Silicate cements (artificial enamel fillings)

are having an extensive use, especially for the anterior teeth. The later productions of these approach very nearly ideal filling materials, but possibly have not the permanency of gold.

Just a word concerning Crown and Bridge Work. Gold shell crowns have a limited use and should not be placed on teeth unless they are too badly broken down for filling, and then only when the appearance of the gold is not offensive to the eye. They have a use as abutments for bridgework. When they are used, they should fit the necks of the teeth accurately and not impinge on gum tissue, otherwise they are unsanitary and tend to cause by their irritation recession of the gums, which may finally result in the loss of these teeth. Porcelain crowns of many varieties are now in general use and from the asthetic standpoint are very desirable. Long bridges with few abutments are not to be commended.

So far we have been considering dentistry simply as a mechanical art, but the medicinal aspect of it is equally important.

Formerly, when a patient was suffering from a toothache there was one remedy, have the tooth removed; now the remedy is to save the tooth by treating the condition which is causing the discomfort.

There are many conditions of the pulp (improperly called the nerve) of a tooth which may cause it to ache. If the pulp dies an abscess may form at the end of the root, causing great distress. The pain is especially severe during the incipient stage before the swelling takes place, where great pressure is brought to bear upon the tissues at the apex of the root by the formation of gases issuing from the dead pulp. Again, if the pulp becomes congested, a toothache is assured. If the pulp becomes exposed or a filling is placed too near it, acting as an irritant, trouble will follow. These are just a few of the many conditions which may cause it.

If the pulp has died, but no abscess has formed, the contents of the canal or canals must first be neutralized by powerful disinfectants and deoderants, then removed; the canals cleansed and made aseptic, filled and hermetically sealed before a permanent filling is inserted. If an abscess has developed it should be reduced by allowing the pus to escape through the root canals of the tooth, or by lancing, and then the canals should be treated and filled as in the previous case. If the pulp for any reason has to be extirpated, there are two general methods of devitalizing it; first, by sealing a special preparation of arsenic in a cavity for a few days, and allowing the pulp to die by strangulation due to the action of the arsenic, or, secondly, by using cocaine under great pressure to force the drug into the pulp and, having deadened or anæsthetized it, remove the pulp at once. In either case, after the pulp has been removed, the canals should be filled before a filling is inserted.

Unnecessary destruction of the pulp should not be encouraged for three reasons; first, the great difficulty of filling the root canals satisfactorily; second, the liability to discoloration of the tooth involved; third, the power of mastication of a devitalized tooth is greatly diminished.

Very often before middle life is reached, and sometimes much earlier, particularly in the case of those persons who do not suffer from decay of the teeth, a worse fate overtakes them—they notice their gums receding, deposits may appear on the surfaces of the teeth near the gums, the exposed necks of the teeth may become sensitive, the teeth gradually become loosened, and are finally lost. This condition is known technically as *Pyrrhœa Alveolaris*. This is a disease which in its earlier stages, especially, is amenable to treatment. Instrumentation, medication, and the hearty co-operation of the patient are the essential elements for successful treatment.

As a last resort, when nature has done her best and all the teeth have been lost, the dentist comes to her assistance by supplying artificial ones. The word artificial is particularly applicable in this connection, for they generally betray their name in both appearance and feeling. So many people value their own teeth so little, but when they have "bought" some, they soon begin to realize the difference between nature's gift and man's poor substitute. Not only are the appearance, discomfort, and uncleanliness of artificial teeth great drawbacks, but, perhaps chief of all, is the fact that the power of mastication has been greatly reduced.

Think what this must mean to a patient's digestion and general health. But is this all that modern dentistry can do? Of course we must treat conditions as they are, and so long as people will neglect to

pay regular visits to the dentist, just so long will there be cavities to fill, teeth to be treated, crowns and bridges needed, and artificial denturs to be inserted. But the profession is not discouraged, it is looking forward to a great future. Its watchword is *prevention*. What has been accomplished during the past few years in oral hygiene and prophylactic treatment serves only to give the keynote of what that future is to be, viz., to educate the public along these lines and thus create a sentiment so strong that regular dental inspection of the teeth at short intervals will be considered a necessity if the general health and comfort of the community and of the nation is to be safeguarded.

The sooner people realize that a clean mouth means health in a large measure and immunity from many infectious diseases, and that clean teeth never decay, the better will it be for the public. Men in our profession have proved that ninety per cent. of all decay of the teeth is preventable, and look forward to a day when this happy condition may obtain.

SMALLPOX AS AN INDUSTRIAL DISEASE OR ACCIDENT

By HERBERT E. CORBIN, M.R.C.S., L.R.C.P., B.Sc, D.P.H.

During 1908 and 1909 cases of smallpox occurred in the borough of Stockport, England, in which after careful inquiry there was evidence of infection being carried through the medium of raw cotton from parts of the world in which smallpox is epidemic.

The following are details of the cases which occurred: A. B., married woman, aged 32, working in the card room of a cotton mill, became ill on March 19th, 1908, with pain in the back, headache and nausea. On March 21st she had a "spotted rash" on her face; and on March 24th she was seen by a doctor who notified the case as smallpox. The case was typical discrete smallpox, the rash being most numerous on the face, wrists and hands, scanty on the trunk. Attempted vaccination was unsuccessful.

The occupation of the woman was that of a combing tender, and in the course of her work she had frequently to piece broken ends of raw cotton together. The case arising at a time when there were no other cases in the country led me to suspect the possibility of infection through the medium of cotton; and through the courtesy of the manager of the mill I ascertained that having regard to the incubation period and the time of arrival in England, the particular consignment which might have given rise to this case of smallpox, came from Memphis and was shipped from New Orleans; and it transpired that while smallpox is epidemic in these places it was more than usually prevalent at the time when the supposed infected consignment was gathered and imported.

I reported the possibility of infection from this source to the Local Government Board, laying stress on the fact that in her occupation of piecing cotton she frequently moistened her fingers with saliva in order to join up the broken portions in the early process of manufacture from the raw material.

In 1909, three other cases occurred in the early part of the year with the following histories:

First case: E. R., aged twenty-one, of David Street, Stockport. Seen by doctor on the evening of February 13th. Had been ill for 48 hours, general malaise, with pain all over, but headache especially bad; temperature 101 deg. The condition improved, but on February 16th the patient began to feel ill again and a rash developed, occurring on the face, forearms and back; the rash consisted of papules, some of which had a shotty feel. The doctor reported that vesicles and one or two pustules were also present, but no signs of umbilication.

As he regarded in this case the diagnosis between variola and varicella as doubtful, he got his partner to see the case with him, and they concluded that, having regard to the length of time between the onset and

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appearance of the rash and the distinctly atypical rash, it was varicella. The rash began to disappear on February 18th, and the temperature became normal. On account of the pain in the back and head at the onset of this case it was regarded as one of influenza until the rash appeared.

I did not see this case until after my attention had been called to the first contact (M. N.), as follows:

Second case: M. N., aged 29, Greg Street, Stockport, baker. Date of onset, February 24th; pain in the back, severe headache, generally feeling very ill; on February 28th a rash developed, and I was called by the doctor to see the case on March 1st. The rash consisted of thickly set papules covering the face and head, also thickly distributed on the arms, forearms and legs, less thickly on the trunk. The papules were hard and shotty to the feel, and several were present on the palms of the hands, also three or four on the soles of the feet. pressure of these papules; the temperature was 101.4 deg. The rash was perfectly uniform so far as the stage of eruption is concerned, and was not in any way polymorphic. The case was diagnosed as smallpox, and removed at once to the smallpox hospital. The case progressed as a typical rather severe case of smallpox, the pustules becoming confluent to a limited extent on the face and neck. On inquiring into the probable origin of this case it was discovered that the girl (E. R.) had been in the habit of helping occasionally at the house of M. N., in Greg street, and that M. N. had visited her at David street on February 16th, and that she was then supposed to be suffering from influenza, but he had heard since that she had developed a rash. Inquiries were made, and the information concerning the first case (E. R.) was obtained.

Third case: M. R., aged 47, David street; mother of E. R.; malaise, February 27th; headache and pain in the back, March 1st; rash, March 3rd. The rash was that of modified smallpox, occurring on face, arms and legs, and consisting of a few discrete papules, hard and shotty, on the forehead. Temperature 100 deg.; patient complaining of feeling very ill. Removed to hospital on March 3rd. The rash passed through typical stages.

Inquiry into the possible origin of the cause of infection in the first case (E.R.) elicited the following facts:

This person had worked in a cotton mill until February 12th, when she was taken ill. The only people with whom she had come in contact for two or three months, besides the employees at the mill, were the family of M. N., where she occasionally helped, and M. N., who visited her when she was ill.

Her occupation was that of a drawing tenter, and in the course of her work she occasionally had to piece broken strands together. This process consists of hauling in a certain amount of slack in order to overlap the broken ends, and then rolling them together with the forefinger and thumb, or between the palms of the hands.

The cotton in use at the mill was grown at Zifteh (a town in the delta of the Nile) in 1908, and the consignment which probably contained the suspected source of infection was shipped from Alexandria about January 13th, and was received at the mill on January 30th, 1909. I further ascertained that smallpox was very prevalent in the Delta towards the end of 1908 and the beginning of 1909, several deaths from this disease occurring weekly both at Cairo and at Alexandria.

Operatives are supposed to do the operation of piecing without moistening the hands, but I ascertained that each of the cases, A. B. and E. R., actually used saliva for this purpose, and I have on several occasions observed operatives facilitate the process of piecing by introducing the thumb and forefinger to the mouth in order to piece the finer strands together, and to lick the palms of the hands when piecing coarser strands. It is easy to see thus how it is possible for infection to be conveyed directly to the mouth, and infected material which might be quite harmless with *ordinary handling* becomes dangerous when thus *introduced into the system* of a susceptible individual.

In January, 1910, seven cases of smallpox occurred among employees at one cotton mill at Heywood, Lancashire, and I am indebted to Dr. Hitchon, medical officer of health, for the following particulars:

The two primary cases were employed at the same machine, each being a stripper and grinder. The raw cotton is passed over revolving cards, from which a number of small spikes project, and by this means it is taken up and cleaned, the useful material adhering to the cards, and the waste

cotton, dust, and dirt drawn by a down-draught into waste boxes below. The cotton is removed from the cards at intervals by the strippers, and frequently the cards require cleaning on account of the dust and dirt collecting between the small projecting spikes. This is also carried out by the strippers by means of hand brushes. As the machine is not working there is no down-draught to carry away the dust which is removed, and thus a considerable amount may be inhaled in the process of cleaning, and by this means the infection may be introduced into the system in these cases.

The cotton used at this mill was Egyptian, but it was not possible to ascertain the exact source from whence it came.

The primary and contact cases, with one exception, had all been vaccinated in infancy, but none had been re-vaccinated.

The fact that two employees working at the same machine contracted the disease at the same time (the rash appearing in each case on the same day) is, I think, strong presumptive evidence that the material upon which they were working was the source of infection; and that any source of infection outside the mill may at once be excluded, especially as they lived a considerable distance from each other and never met except during their work at the mill.

In gathering the cotton the pickers, who are natives of both sexes, carry large open-mouthed bags, which are slung round their necks and hang in front of the body. They gather the cotton with both hands as they pass down the rows in the field, and deposit it in these bags. An almost universal habit obtains among the pickers of both sexes of chewing tobacco, and in the States a root known as "waheyawa." During their work they indulge constantly in the habit of expectoration, and very frequently some of the expectorated material enters the bags containing the raw cotton. Chewing and expectoration also occurs when conveying the cotton in waggons to the gin, in the process of ginning, and also when shipping the baled cotton at the docks.

Precautions are taken as far as possible to prevent infected persons from gathering cotton in the cotton fields, and from handling it at the points of export. When smallpox, however, is prevalent among natives, quite a large proportion of the cases are very mild. "Missed" cases are, therefore, frequent, and these continue to work in the cotton fields throughout an attack of the disease, so that it is impossible entirely to avoid contingency of some of the cotton becoming infected in the process of gathering.

In the report of the New Orleans Board of Health for 1907, referring to smallpox, it is stated that "the bulk of the infection was due to repeated importation of cases both in the incubative and the eruptive stage, the spread of infection from individual cases being limited in most instances to one or two cases of the disease at most." During the year 234 cases occurred in New Orleans, and it will be thus seen from the above statement what a large number of cases "both in the incubative and eruptive stage" unavoidably enter the towns. The fact again that only ten deaths occurred among the 234 cases in the city of New Orleans points to the mild nature of the disease. In the States a prevalent superstition is current among the natives that the white medicine man is endowed with witchcraft, so that natives smitten with disease of any kind prefer to hide away and take their chances unattended rather than come within the grasp of the doctor. These facts, I think, will make it clear how extremely difficult, if not almost impossible, it is to control such a disease as smallpox among natives in large cotton-growing districts. Further, the existence of the undesirable habits of chewing and expectoration which have already been referred to under such circumstances will also make clear the impossibility to avoid raw cotton becoming infected with smallpox.

Dr. Ross, medical officer of health for Cairo, has been kind enough to send me a statement showing the incidence of smallpox in Cairo, Alexandria, and Port Said during the past four years. He states that "the period of comparative immunity in Egypt is now about nine years." The last outbreak began in Alexandria in 1907, when 504 cases occurred; it then spread to Port Said in March, 1908, and to Cairo in December, 1908, where, during the early part of 1909, 447 cases were notified, with 200 deaths.

Smallpox in Cairo, Alexandria and Port Said.

Date	Cairo		Alexandria		Port Said	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
1906	36	9	80	41	7	1
1907	62	24	504	253	15	7
1908	260	95	25	10	42	10
1909 (January to July)	117	200	-	-	-	

Dr. Ross states that "it should be noted that very little cotton is exported actually from Cairo itself, but that the majority is packed in the country districts and exported mainly from Alexandria." It is obvious from what has been said that very little infection of cotton occurs at the ports, and that the great danger exists from mild cases working in the cotton fields.

Under ordinary circumstances the disease is communicated by more or less intimate contact with an infected person, and there is little doubt in the case of this disease that fomites and infected materials are a source of danger, so that the mere handling or contact with such infected articles is sufficient to spread the disease.

Raw cotton, on account of its texture and organic nature, would no doubt constitute a suitable nidus for the organism of the disease. It is acknowledged that the "striking distance" and infectivity of smallpox is very great, probably greater than that of any other infection; but there is also evidence that the virus of smallpox becomes rapidly attenuated, and that infected material becomes entirely non-infective after a relatively short period. The time which elapses between the gathering of the cotton and its appearance at the mill, in the card-room, or in the spinning room, would probably be sufficient to reduce the infectivity of the material to a minimum and negligible quantity unless the infection was actually introduced *into the mouth* of a susceptible person.

I am inclined to the view that, although the imported raw cotton, containing, as it may, an occasional living attenuated organism of smallpox, may it be handled *en masse* without danger of infection by a large number of people, and in more detail by winders, reelers, splicers, doublers, and doffers, the only operatives who would be subject to infection in the manner I have indicated would be those in the blowing-room, the card room, or the spinning room.

If the cotton was so infective as to produce a case of smallpox by the mere handling, frequent epidemics would be inevitable in the cotton industry, and hence it is probable that all instances of smallpox occurring in operatives in the cotton trade are due to the accidental introduction of the attenuated virus from the raw cotton into the system by the mouth. The resistance of the individual has to be taken into consideration, more especially as very many operatives in a cotton mill are unvaccinated and practically none of them revaccinated.

In considering how far the occupation as a cotton worker may have acted as a factor in causing the disease, the following facts have been shown to exist:

Smallpox was very prevalent in districts where cotton was gathered. Missed cases undoubtedly occurred among natives employed in the gathering fields. It is impossible to entirely avoid cotton becoming infected by the natives. The raw material from these districts is imported for use in mills in Lancashire, and certain employees working with this cotton contract smallpox, when no other possible source of infection can be ascertained, and when no other cases have occurred in the country. Thus, short of actually finding the organism in the infected material, which unfortunately at the present time is impossible, there is a complete chain of evidence showing that smallpox is conveyed from the native, gathering cotton in Egypt or in the States, to some employees in the cotton mills in England. Fortunately, the probability of accidental infection of smallpox arising from imported raw cotton is very small under ordinary circumstances, inasmuch as the coincidence of a number of contingencies is necessary for its occurrence:

(1) Infection during gathering and importation is guarded against as far as possible, and is therefore not of frequent occurrence;

(2) Considerable attenuation of infectivity in any infected material occurs before it is dealt with by the employee;

(3) With such reduced infectivity there is little chance of infection unless this is introduced directly to the mouth or inhaled;

(4) A person employed in piecing only occasionally uses the saliva as a means of facilitating the process, and the probability of the strands of cotton requiring to be pieced just at a point where a portion of infected material is situated, is small;

(5) It is necessary, for infection to occur, that the individual should be susceptible to the disease. This susceptibility, though greater with age, is not common in vaccinated persons, and practically non-existent in revaccinated persons.

Naturally the danger arising from raw cotton becoming infected with smallpox by natives suffering from the disease is not so

great as that arising from anthrax-infected materials, on account of the presence of highly resisting spores in the latter disease, while in the former it is more than probable that the casual organism dies or becomes rapidly attenuated, unless existing under unusually suitable conditions of warmth and slight humidity, such as would occur in bales of raw cotton.

I think it is quite justifiable to assume that the primary cases of smallpox which have been described are industrial accidents arising "out of and in the course of" the employment in cotton mills.

There is no doubt that smallpox may be regarded as a physiological injury inflicted by an organism; and Lord M'Laren stated that if a workman in the reasonable performance of his duties sustains a physiological injury as a result of the work he is engaged in, this is accidental injury in the sense of the Workmen's Compensation Act.

Although the rarity of the cases of smallpox arising from cotton might not justify the disease being added to the schedule of industrial diseases, it appears to me highly important that the possibility of the disease arising among employees in the cotton trade should be borne in mind, not, perhaps, so much from the point of view of the person who first contracts the disease, as from the point of view that such a primary case might be the centre of an epidemic; and, therefore, it is advisable that revaccination of all employees in cotton mills should be made compulsory.

SOME NOTES ON FEVER HOSPITALS

By A. SAXON SNELL, F.R.I.B.A.

Although there are several works on the construction and management of general and cottage hospitals, some of them comprehensive and almost exhaustive, the subject of fever hospitals *per se* does not appear to have been dealt with except in the form of isolated reports and descriptions of many large institutions erected in the last ten or fifteen years. There are also short reports and treatises upon various problems connected with the subject which are of considerable value; and much statistical information of the highest importance and some interesting theories are to be gathered from the minutes of evidence in commissions of inquiry. The London Metropolitan Asylums Board must have accumulated a great deal of valuable information and experience for many years past; and not a little of this may be found in the Board's annual reports. I should add that for a set of short and concise rules there was nothing better than the paper issued by the British Local Government Board for the guidance of local authorities in the erection of these institutions. They were based upon the experience and opinions of the most eminent authorities; but necessarily not much in the way of reasons is given for the recommendations. A glance at the plans and arrangement of many fever hospitals suggests that each has been evolved from a cursory study of those which preceded it, and all are, of course, more or less based on the Local Government Board's rules. It is not often that we find therein the expression of new or advanced ideas. A really comprehensive treatise upon fever hospitals is much needed, and it must be very much more than a mere record of what has been done in the past.

The purpose of this short essay is not so ambitious, and will be confined to recalling an old idea or two, which I venture to think might be reconsidered profitably, and also to draw attention to an experiment which is worth, and in some directions, is receiving, much attention.

It is no light matter for an authority to be compelled to erect a fever hospital. The number of beds required is generally determined by a ratio to the population of the district (subject to modification in the light of local conditions); but the number so obtained is for the greater part of the time absurdly too large, and in times of epidemic it may easily prove too small. On the one hand, we have to face waste and on the other positive danger. Responsible authorities have to, and do, choose the lesser evil, and so are obliged to saddle

From a paper submitted to the last Royal Sanitary Institute Congress, at Brighton, England.

the community with buildings which are wholly or partially unused for months or even years.

Fever hospitals as generally built are expensive erections. The cubic space per bed is double that required in a general hospital, and the area of land is even greater in proportion. A general hospital may be built within the confines of a town; a fever hospital must be isolated in open country. Yet again, different institutions, or at least different ward blocks, must be provided for different diseases. What this may mean in the way of buildings and engineering equipment is obvious. If all these precautions and their great cost brought phenomenal success we might leave well alone; but a perusal of hospital reports scarcely gives the impression, although very great improvement has taken place in the last ten or fifteen years.

Now, as to hospital buildings (with which, of course, I am more immediately concerned), it has been sought to reduce the cost by constructing them of light and cheap materials — generally timber framing lined with boarding and galvanized iron, and this method has been advocated also on the ground that all fever hospitals ought to be pulled down and burnt within a limited number of years. They are, however, wasteful of heat, require great expense in repair and up-keep, and it must be added that the moral courage required to scrap them periodically is often wanting. Moreover, they are necessarily crowded with dust and germ-holding corners, angles and hidden spaces.

There are, however, modern methods of erection not open to these objections, and it has always appeared to me that excellent buildings at comparatively small cost could be obtained with steel framing filled in with light concrete construction. The walls might be formed with two thin slabs fixed so as to cover the steelwork, and with a small air-space between them which would help to keep the building wind and weather tight and reasonably warm. They would be finished inside and out with hard plaster The floors would be formed with concrete laid between steel joists, and covered with one or other of the many patent compositions in the market, which are both impervious and cheap. The ceilings would be formed in the same manner as the walls. With such a method of construction it is easy to obtain those flat and even surfaces, unbroken by unnecessary and dust-collecting ledge and angles, which are to be avoided at all costs in fever wards. The windows would be steel casements, and the doors might with advantage be framed with steel and sheet iron. Periodically the concrete filling and surface finishings might be removed and reinstated with new material. The steel framework would require washing only. Such buildings, or, rather, the framework, could be taken down with comparative ease and at small expense for re-erection on a different site if required; and their cost, although greater than ordinary wood framed constructions, would be far less than for permanent brick and stone buildings.

It would be unnecessary—indeed, undesirable—to build the administrative and staff quarters in this manner, as there is no special reason for housing the officers and servants otherwise than in the manner usual in ordinary hospitals. These should certainly be designed as permanent structures and with due regard to comfort and pleasure.

Another point to which I would refer is a method of reducing the number of separate blocks for different diseases and obviating the necessity of placing not more than one disease in a ward. The Pasteur Hospital in Paris is a practical experiment in this direction. A small building comprising a complete hospital designed by myself is, I think, an improvement upon the model, if only because its sanitary offices and the means of approach and exit are more effectively separated from the wards than is usual in French hospitals.

In passing, I may say that the system has been adopted in England, I believe, in several places, notably at Norwich and Walthamstow. The Metropolitan Asylums Board have also made experiments in the same direction.

The building I have designed is two storeys in height (one would be better, but the site was constricted). Each ward block is divided into separate rooms (12 on each floor) in either side of the corridor, which is open to the air at each end. The internal walls of these rooms (each of which is for one patient) are of plate glass fixed in light steel frames. The glass is obscured to a height of 30 inches. In this way the patients are more easily kept under observation, and suffer the monotony of isolation in a modified degree only. Each

room is separately ventilated and heated. The casement windows are relied upon at most times for bringing in a flood of fresh air, and the vitiated air is drawn off by large flues at the ceiling level. I think it would be of advantage to assist the outflows by electric fans. By these means there is no possibility of the air from one compartment being carried into another; and under these circumstances(as conclusively proved by the Pasteur Hospital) it would be possible to treat several different diseases in the same building.

A balcony is carried round the building on both floors, from which the patients can be seen by friends or relatives. The staircase and lift approach, as also the bathrooms, ward kitchens and soil sinks, are cut off by a passage open at each end to the air. A separate exit staircase and lift; linen rooms, discharge room, etc., are placed at the other end of the building and cut off in the same way. It is scarcely necessary to add that the floors and roof would be of solid construction and fire-resisting, and, of course, all angles are rounded and every kind of ledge for dust avoided. The lower floor is placed several feet above the level of the ground to allow of a free circulation of air below as well as above and around the building. The various pipes for conveying heat, water and lighting would be suspended from the ceiling of this open basement, and all should be well insulated against cold. The whole building might with advantage be constructed throughout in ferro-concrete, although this form of construction does not honestly lend itself to the ornament which would render the building sightly.

Editorial

Advertising and Public Health.

An example of an offence still quite common in spite of awakening public opinion against it, was the recent appearance in a prominent portion of our daily press of a large notice written in the usual exaggerated style of quack literature and purporting to be the wholesalers' announcement of the sale of Professor Dr. Ehrlich's reputed antisyphilitic preparation, Salvarsan. In this announcement the reader was advised that upon receipt of $30.00, which included custom house duties, "The 606 Laboratores," 33 West 42nd Street, New York City, would ship in plain unmarked package the necessary dose with simple direction for the taking of Salvarsan in the privacy of the home; that the preparation contained neither mercury nor iodides; that no matter what stage the disease was in, nor of how many months' standing, one does cured permanently; that symptoms disappeared in two days; and that owing to the very limited supply of Salvarsan it was not expected that the announcement would appear again for six months.

The possibility of purchasing Salvarsan from local wholesalers at one-tenth this advertised charge, the manifest endeavor to take advantage of the sick, the known contra-indications in the use of true Salvarsan and the dangers of its application in the hands of the unskilled, classes such advertising as, at least, fundamentally immoral; and its acceptance in every case either the act of an equally unscrupulous accomplice or the result of inexcusable ignorance as to what constitutes rectitude in the journalistic world.

A great daily, or other periodical in proportionate degree, occupies a position of trust which should necessitate a reasonable consideration of public health in advance of personal profit, and should prevent the utilization of advertising power as a "cat's paw" on our people. Few among the general public have opportunity or consider it necessary to investigate, or are qualified to judge between deception and truth in the publicity department of a presumably high principled journal; and it is therefore specially desirable that the same trained attention to motive and accuracy of statement be given to dilatations on disease and its cure in the advertising pages, as may be given in the editorial columns, where such high journalistic principles are a fact.

Hygiene and the Ontario Legislature.

The recent amendments to the Ontario Public Health Act, and the establishment of regulations regarding the production and sale of milk by a separate Act, demonstrate that Ontario has at last realized the importance of prompt action in State prophylaxis. By amendments to the Public Health Act the powers of the Chief Medical Officer are now so increased that in the intervals between meetings of the board he is able to perform his duties with equal authority.

The amendment to section 13 of this Act aims at preventing pollution of inland waters; while another excellent amendment is that in regard to section 30, declaring that sewerage or water supply systems must receive the approval of the Provincial Board of Health before the work is commenced; and, again, to section 71, directing that abatement of nuisances shall be undertaken by the local board after due notice and at the expense of the occupant or owner of the indictable property.

The amendment, under section 72A, directs that "No person shall keep or store rags, bones or other refuse within the municipality unless same are kept and stored on premises approved by the local Medi-Health Officer."

By the recently enacted Ontario Milk regulations, the council of each Ontario municipality is authorized to pass by-laws for regulating milk produced for sale, offered for sale, or sold in such municipality; as to the care of cows, producing milk for domestic consumption; the cleanliness, ventilation, and sanitary conditions of the places in which cows are kept or milked, or in which milk is stored; the water supplied to cows; the care and cleansing, construction and type of all utensils used in handling milk, whether by producers, carriers or vendors; the cars, storage, trans-

portation and distribution of milk by producers, carriers or vendors; the making of bacteriological tests for the purpose of ascertaining the wholesomeness of milk offered for sale by any producer, carrier, or vendor; and such other matters regarding the production, care, transportation, or sale of milk as the local council may consider necessary; and upon such regulations being approved in writing by the Minister of Agriculture, the same shall apply to all milk produced for sale in such municipality.

The Milk Act further authorizes the council of every municipality to regulate the sale of milk to licensed dealers; to fix standards of butter fat and solids in milk; to prevent the use of preservatives, etc., and to appoint inspectors to enforce these regulations.

In connection with the inspectors' work, the result of all milk tests shall now be open to public inspection at all reasonable times and may be published by the Medical Health Officer of the local municipality if he so desires.

The Act prohibits the sale of milk from diseased cows or that produced in places where persons are suffering from diseases, while cans, bottles, etc., are not to be used for any other purpose and are to be properly cleansed.

An excellent section of this Act contains the direction that every municipality is authorized to establish and maintain or assist by annual grant or otherwise, in the establishment and maintenance of milk depots in order to furnish a special supply of milk to infants. It shall also be unlawful in Ontario to apply the term "certified" to any milk which does not comply with the regular standard which rests upon the semi-annual tuberculin test of cows; the limitation of bacteria content in milk to 10,000 per cubic centimetre from June to September, both inclusive; and not more than 5,000 bacteria per cubic centimetre from October to May, both inclusive; freedom from blood, pus or disease producing organisms and from disagreeable odor or taste. The milk shall also have undergone no pasteurization nor sterilization and must be free from chemical preservatives. It shall be cooled to 45 degrees Fahrenheit or under, within one-half hour after milking, and kept at that temperature until delivered to the consumer. It shall contain 12 to 13 per cent. of milk solids, of which at least 3½ per cent. is butter fat. It shall be from a farm, the herd of which is inspected monthly by an authorized veterinarian and the employees of which are examined monthly by an authorized physician.

The Act further directs that it shall be unlawful to apply the word "pasteurized" to any milk unless all portions have been subjected to the prescribed pasteurizing process. This section is to be enforced after July 1st, 1911.

It will thus be seen that the Ontario Milk Act covers the ground fully and, if enforced, will be of the utmost value to the entire province. The limitation of the use of the words "certified" and "pasteurized" is a wise procedure, and the authority given municipalities to establish and maintain milk depots for the purpose of supplying pure milk to infants, is an excellent idea. It will be interesting to note what effect the latter regulation will have if complied with, on the infant mortality of Ontario.

Altogether, we believe this public health work of the Ontario Legislature be-speaks careful consideration of matters involved, and if nothing else had been done during the session just closed, the province is herein well repaid.

Inter Alia.

The arraignment, in the Dominion House on the thirtieth of last month, of Ottawa, by E. A. Lewis, M.P., as a place overrun with typhoid; abounding in smallpox and other diseases; lacking in drinkable water and eatable meat; without a sanitary system, proper fire escapes or inspection of public buildings—may be considered sweeping, yet appears in part a repetition of the late report of the Chief Medical Health Officer for Ontario.

It will be remembered that Dr. McCullough said in this report that "In view of the present conditions and the oft-repeated warnings given this city, which are now on record in the office of the Provincial Board of Health, I have no hesitation in affirming that the responsibility for the present epidemic is upon the authorities of Ottawa. Theirs is the experience of scores of places which cannot be induced to spend money for the protection of human lives until they receive such a lesson as your city is now experiencing."

Of quite as much importance to the health of municipalities as specific sanitary measures for cleaning up particular districts, are regulations for the safe and sanitary construction of buildings.

Three particular duties that every community cannot afford to neglect are: A thorough system of vital statistics, medical inspection of school children and stringest safeguards against soil pollution. Each of these important duties lies directly within the province of municipal and state government.

Without a record of deaths and illness, a city can do no more than grope half-blindly, however zealous its efforts may be to improve and foster public health. There must be definite knowledge concerning the time and localities where diseases, especially contagious diseases, occur, before any considerable headway against them can be gained. Vital statistics are as essential to a community's health as a system of accounting is to the stability and progress of a business institution.

Many cities have already learned the great benefits of medical inspection in the public schools, though it is doubtful if even yet we fully appreciate the value of this system.

Soil pollution is more of a rural than a municipal problem, though in its ultimate effects it is a menace to town as well as country life. The pollution of the soil gives rise to water pollution and may bring impurity in food and milk supplies, thereby establishing a "vicious circle" which, in the long run reacts unfavorably on every member of the community. In suburbs and country districts there is no matter of more vital importance than that of the hygienic disposal of sewage.

Despite the fact that measles is one of the commonest, most widespread, and, by reason of its complications, most dangerous diseases, it is not in many places notifiable. The reason is perhaps a paradox. It is not notifiable apparently because it is so dangerous, so common, and so widespread that the local health organizations are afraid to tackle it, and because it is very difficult to diagnose in the early stages.

Measles—like the other infectious diseases—is part of the price we pay for the slums. In the slums measles breeds continually, the infection passes from one to another, sometimes affecting many cases, sometimes only a few, but always smouldering. At certain times the poison of the disease appears to become more virulnet, and sallies out from its breeding places to attack those who live outside the poorest parts. Then it is no respecter of persons.

No feature of social life is more easily made the means of spreading disease than the poor lodging houses. Men from all points gather there, making these places natural incubators of disease. It is impossible to determine in advance either the character of the patrons or their state of health. Without the strictest of supervision it is easily possible for a victim of some disease to spend a day or night or several days and nights in such a place, and to pass on to some other occupant an infection that will be carried out to some neighboring or remote part of the country. The conditions that have been allowed to develop in the lodging houses have been such as to breed disease when it once has gained entrance, and to encourage its entrance. Under the old form of management the lodging houses have thus become a menace to public health.

It possibly will be urged that the men who occupy the lodging houses are satisfied with conditions as they find them there. It might be urged with equal justice that the child is satisfied with his natural ignorance of reading, writing and the other elements that go to make up a common school education. Yet we compel the child to attend school, and go to great expense to insure his education. These men are as greatly in need of instruction in cleanliness and health as the child is of instruction in the elements of education: we owe them quite as much as we do the child, and the fact that the conditions with which they are surrounded in the lodging houses constitute a menace to public health makes our duty to them even more imperative, if any thing, than that owed to the children.

To teach these men the theory of cleanliness and health is good; to furnish them with surroundings that are a continual object-lesson in the line of that teaching is a

logical and invaluable step in such instruction. By cleaning up the lodging houses, municipalities will insure better citizenship on the part of a lot of hardy, able fellows and will give them a better chance in life by the encouragement they will get from such surroundings.

The number of persons who may inhabit a room at one time is not so much the concern of society as is the effect it has on their health, their morals, their social efficiency and their economic asset to the body of which they are members. The effeminate and inefficient foot cannot say to the hand or the head, "I have no need of thee," nor can the head say to the weak foot, "I have no responsibility for thee nor does your sickness effect the clearness or utility of my thought."

If the overcrowding of tenements is due to ignorance, greed or the lack of interest in the general welfare, then the social body should enforce altruistic standards for its own protection; or if these people are not remunerated sufficiently by the economic system, then they should be paid a sufficient compensation to enable them to pay their way on a higher plane of living.

People do not live in old shacks, unattractive environments and unsanitary conditions by choice, but by necessity. Because of the size of the family, their wages and rent required, the poor people are compelled to find small apartments. These fellowmen are entitled to something better. The amount of money they pay for rent would put desirable living quarters from a municipal standpoint on a sound business basis.

The great life insurance companies have been bestirring themselves in the last two or three years and looking into the subject of how and why longevity is increasing and how it can be made to increase still further. They have found that more people reach 45 years of age than ever before in the history of the world, but they die faster after 45 than they ever did before. The high pressure of modern life, they say, is to blame for this as well as for an increase of insanity.

Although human life is lengthening the mortality tables upon which the insurance companies base the premiums they charge their clients are more than 50 years old. Nearly half the population of the English-speaking world is insured, and the companies are reaching out after the other half. Many plans have been devised for the lengthening of the lives of the policyholders so that they may pay premiums the greatest possible number of years. Most of these plans have been along the lines of the prevention of tuberculosis and other prevalent diseases, but none of them has been carried out except in theory as yet. It is safe to say, however, that if the great insurance companies, with the incalculable sums of money that they control, should take up seriously the question of purifying and bettering the cities in which the policyholders live they would speedily get their investments back many times over through the increased income. In the village of Bournville, a suburb of Birmingham, Eng., the death rate is less than half what it is in Birmingham. The village is owned and kept sanitary by a great manufacturing concern that gives employment to its inhabitants and spends money in keeping them housed and clean purely as a business investment.

Sanitation is not the whole thing that is necessary in prolonging life and in keeping the death rate down, although it is the basis of the work. Industrial conditions have a very great influence upon human life also. For instance, more babies die in large factory towns in proportion to the population than in any other place, because these are the towns in which more than half the women work almost constantly outside their homes. As the babies are born they are left comparatively uncared for by their mothers because these mothers must work in the last moment before the stork comes and must get back to the factory as soon as possible afterward. This question of industrial labor and its influence on the death rate is also a purely business and economic one. Doubtless some day either women will be debarred from industry or industry will be made fit for women.

Library and Laboratory

The Care of the Insane Pending Commitment: As one of the first steps in its work for the improvement in methods of dealing with the mentally unsound, the Illinois Society for Mental Hygiene has published a pamphlet prepared under its direction by Dr. Addison Bybee, entitled "The Care of the Insane Pending Commitment." The study deals with conditions in Cook county, Illinois.

Of the 2,000 patients judged insane last year in Cook county, Illinois, 1,259 were brought in by the police and 597 had been confined in police stations. In all these cases, Dr. Bybee indicates, the patient was dealt with by machinery created for criminals, not for sick persons. The accommodation in most of the police stations were found to be repulsive and unsuited to the care of the insane.

Dr. Bybee, besides pointing out special deficiencies in the treatment accorded the mentally unsound during the process of commitment, contends that the entire theory underlying the process is absurd. "It is surely unscientific," he says, "for legal authorities to diagnose mental disease. There will always be the legal side to commitments, as there is to quarantine and other safeguards to public health, yet we do not subject the man who has smallpox or the bubonic plague to the ordeal of having a judge and jury pass upon him as to whether he is suffering from noxious disease and should have proper care. We would not dare to submit the care of the public health to laymen, and yet we allow a judge and jury unskilled in the science of medicine to pass upon a man's sanity."

Dr. Bybee cites several cases in which the court's disposition, from the medical point of view, revealed bad management. These were cases in the early stages, in which stages hospital care has its best results. The patients were subjected to the methods used in disposing of offenders against the law, and it was evident that their dismissal was regarded by judge, bystanders and friends as acts of clemency. "It was not realized," says Dr. Bybee, "that the best chance of recovery was being withheld from these sufferers, several of whom were sent back to the custody of improper persons and in some cases to become a nuisance to themselves and others."

The Boric Acid Danger: James Scott, in *The Sanitary Record*, points out that the professional controversies at present raging round the subject of boric acid as a food preservative have practically assumed the dimensions of an intellectual warfare. Outsiders must look on, he says, and wonder what are the merits and demerits of this remarkable boric or boracic acid—the two names signify the same substance—the manifestations of which, one would excusably think, ought not to so strangely puzzle the doctors and analysts.

No. 1.—A solution of boric acid develops several transparent crystalline figures as the above (plus magnified pictures.

In view of this agitation and its importance in a dietetic direction, it will be worth while to make a direct acquaintance with the characteristics and composition of boric acid. It has its origin in a dull green powder called boron, which when heated burns and leaves behind it an oxide of boron—that is boric acid. The oxygen of the air combines with the residue to form this oxide.

Borax, a substance used widely in soldering, consists of a compound of boric acid and soda, and if this composition is mixed with hot sulphuric acid pure boric acid is yielded, as the sulphuric acid extracts

By evaporating a dilute solution of boric acid on a glass slide until a crystalline ridge forms around it, the inner area becomes filled with filigree of this kind. Shown magnified in a $\frac{1}{4}$in. pinhole

the soda as sulphate of soda, and leaves the boric acid free as at first. Borax is sometimes used as a substitute for boric acid.

Borax has been imported from the East Indies under the name of tincal. It is found as a biborate of soda (which, when purified, produces boric acid) in certain lakes in Thibet and Persia, and elsewhere. Although it has acid properties it gives an alkaline reaction with test papers. The latter are, by the way, used for distinguishing acids from alkalies by their change of color. A blue litmus paper will be converted to a red color in contact with acid; and a red paper will become blue by impregnation with an alkali, such as soda.

Commercial boric acid appears as a salt-powder, being then glistening and granular. It will melt to a liquid that cools and hardens exactly like molten glass, and is very difficult of removal from the slides when in this condition. In its heated state it will melt the oxides of metals, of which common iron rust is one. Suppose, then, a rusty knife spreads some boric preserved butter on hot toast; or boiled milk encounters a few specks of rust in the saucepan —what will be the effect on the human body? Upon being impregnated with absolute alcohol borax will disclose a brilliant green flame upon being ignited.

We will consider its microscopical features later on

With regard to its use in milk, butter, and so on, Mr. Scott thinks, after having well studied all phases of the arguments for and against it, that it should be irrevocably condemned; but that it may be advisable to review some valuable opinions on various points. Dr. Wiley, the eminent food expert, considers that "it is easy to show by mathematical data that no matter how small the quantity of an injurious substance or preservative is, it will still produce an injurious effect." Now it is admitted on all sides that boric acid is injurious in excess of certain small amounts; but it is claimed that while those lesser quantities retard natural decomposition, they are quite innocuous to the human system, and should, therefore, be permitted in food. Such an acknowledgment is risky because, in the minds of ignorant manufacturers and vendors, it would, presumably, be regarded as equivalent to saying that boric acid is harmless in food. It is notorious that laymen do not understand the value of the strength of chemical solutions. There is a tacit belief that a poison is a poison, and a harmless substance a

No. 2. Melted boric acid resembles molten glass, and when water comes into contact with it in that state it splits up into cakes that are opaque for a while, and then divide into tiny hexagons. A magnified $\frac{1}{4}$in pinhole

harmless one under any circumstances. Such confidence would result in people who were legally allowed to use a few grammes of boric acid adding thereto according to their own impressions, whereas by total

prohibition no danger of the kind to the community would be possible.

Among those professional men who advocate preservatives in moderation is Sir Lauder Brunton, who sensibly claims that because quickly decomposing foods such as milk are dangerous by engendering toxins that act deleteriously in the body, small portions of food preservatives that have hindered decomposition are not so bad as the untouched stale products. On the other hand, some analysts and bacteriologists assert that while boric acid does prevent the multiplication of most bacteria, the pathogenic specimens are enabled the better to multiply through the absence of competition with other species.

We have to remember in this connection that the standard of quality in the chemical would probably vary among different makers; as it is difficult to ensure that every sample of boric acid shall be of exactly the same degree of purity as is expected. These substances are very liable to changes and effects due to heat, cold, dampness, and other factors. If you take copies of a prescription to a dozen different chemists on any one day for preparation, you will find very noticeable unavoidable variations in the medicines.

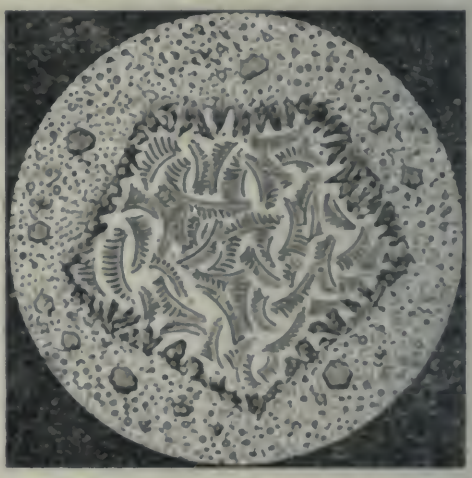
Dr. Wiley conducted some experiments on human subjects, on behalf of the U.S.A. Government, to test the effects of boric acid. From four to five grains in capsules were daily served to selected men, with the result that they eventually suffered from loss of appetite; and various illnesses. No man could endure more than three grains daily without exhibiting some form of suffering; and it was concluded that half a grain would be too much for consumption, as the substance is cumulative in effect.

As a set-off against these pronouncements, Libreich, the expert scientist, asserts during a strong criticism of Wiley's experiments, and after having had access to the building in which they were demonstrated, and examining the various documents concerned, that: "No injurious effects were produced by the administration of the boron preservatives." And also "the administration of the preservatives borax and boric acid in capsules allows of no conclusions as to the effects of borates when added to food." Most decidedly, a substance that has been thoroughly incorporated with another is far better adapted for assimilation than the same thing in a lump.

One advantage (?) accruing from the use of boric acid is that it is tasteless, unlike salt, which is the accepted, unchallenged preservative. It has been proved that two lots of butter, with which were mixed respectively 1 per cent. of boric acid and 6 per cent. of salt, resulted at the end of nine months in the last-mentioned becoming quite rancid and unfit for food, whereas the first—or boric compound—remained fresh and palatable the whole time.

The disadvantages (?) are that it is not a component of the human body. Nor are the minerals nitre or saltpetre, table salt, vinegar, and other substances passed by analysts. That it injures digestion—so do the things that have just been referred to.

Quite recently, the Public Analyst of Kensington, England, Colonel Charles E. Cassal, whose experience and opinion are



of exceptional worth, declared emphatically that boric acid should be "absolutely prohibited";; and he is backed up by the food expert, Mr. Charles Hyatt-Woolf, the editor of *Popular Science Siftings*, whose books on food and food frauds have a wide reputation.

While boric acid arrests decomposition, it also as readily conceals it when it has already commenced, or proceeded to a certain stage; so that what appears to be quite fresh cream or butter may actually be bad, and possess the double vice of being partly decomposed, and of containing a risky preservative.

Endeavors have lately been made to prove that boric acid can quite naturally enter milk through the cow feeding on par-

ticular plants or weeds, so that a new phase is imparted to the discussions and difficulties of settlement.

It may be a relief to turn to the remarkable details to be seen through the microscope. Upon dissolving some boric acid in a drop of water on a glass slide, and magnifying it, various transparent shapes appear in it as in No. 1. They arise one after another, and spontaneously ,and may enlarge within a few minutes, or coalesce into an indistinguishable mass. Sometimes symmetrical plates will divide up prettily into hexagons, triangles, and other figures, and separate as individual crystals. When the water content of the acid solution has evaporated there remains a crystalline residue of curves, hexagons, etc.

If the liquid solution be held over a lamp until a crusty ridge appears round it, the inner area will dry to a patterned substance of the kind delineated in No. 2.

Upon melting some boric acid, minus water, to the glassy condition and then dropping cold water upon it, it turns brown and opaque, and splits up into variously shaped cakes, one of which can be seen in No. 3. The previously wholly transparent substance soon becomes crowded, or granulated, with minute hexagons which break off and float away in the liquor. Meantime the transparency is resumed, beginning at the edges and driving the opacity inwards until it becomes gradually denser and finally disappears. Odd crystals continue to form here and there around.

Upon subliming boric acid — that is, heating it and catching the condensing vapor on another sheet of glass—we obtain the crystalline details of No. 4, for the whole of the vapor condenses in this peculiar manner, with numerous hexagons as well, some being mere specks

Seeing that boric acid is so strangely changeable in these easy ways, it is quite possible that heat, cold, moisture, and stomach acids affect it so as to render it an undesirable acquisition to the body. At any rate, it is a doubtful preservative, and as such deserves to be tabooed.

Accidental cure of hookworm: An amusing story of the first hookworm cure in North Carolina finds place in the Bulletin of the State Board of Health, and if the story had been appreciated in season this cure might have saved an enormous spread of the disease, but at that time, 1867, there was not any such disease known in the country. The patient was a sallow-faced, unpromising, undersized youth, who had not seen a well day since he could remember. For a prophylactic against a prospective night of hunting the youth sought the local doctor for a fortification of hive syrup. The physician was himself under the weather but in so simple a matter to save himself the effort of going to his medicine closet, he directed the youth to help himself to a dose from the second bottle on the first shelf. Of course, the stupid boy picked out the first bottle and drank half the supply of oil of thyme that was in that end of the country. Not long afterwards he was hauled back to the office half dead from vomiting and purging. From this moment there opened to the youth a new earth and a new heaven. From an ignorant, much ridiculed boy of sixteen he rapidly grew in favor, from and stature, till his original 80 or 90 pounds' weight was more than doubled. He got on well in the world and was surrounded by a well educated family of pretty girls and handy boys. The thyme had done the trick. but it was thirty years before the moral of the tale was appreciated. The incident is useful at least in determining that the hookworm is by no means a recent importation to this continent.

Sanitation in the Farm Home: "Living in the country" should, of right, be the panacea against all diseases arising from impure air, impure water and adulterated or unfit food. But, population considered, there would appear to be little difference in the extent to which such diseases prevail in country or city. As says a contemporary:

"Every case of tuberculosis, city or country, proves that with pure air 40 miles deep over our heads, we have chosen to breath impure air. Every case of typhoid fever—and we cannot deny that the farm home has them—proves that the drainage from stables or outbuildings has somehow gotten into the well, or that our worst enemy, the common housefly, has washed his dirty feet in our food. Every case of diphtheria proves that filth is not far off."

Lack of ventilation in sleeping rooms—a superstitious dread of outside air — is probably responsible for a large majority

of the cases of tuberculosis occurring on the farms. People who sleep practically out of doors—that is, with window sufficiently open—seldom contract tuberculosis. So long as the bed is warm, it matters little how cold the room is. The arctic traveller, ensconced in a fur slepping-bag, and with no canopy but the stars, takes his rest under almost ideal conditions. The Eskimos never have consumption until brought south and compelled to live in houses like ours.

Typhoid fever will never originate on a farm if the water supply is kept pure. Such purity is assured by the "driven well," sunk deep enough to be secure against the contamination of surface drainage. And it often happens that such a well is cheaper than a dug well, the security of which against seepage from barns and out houses is always a matter of doubt unless tests have proven that the drift of contaminated under-surface waters is away from and not toward the well.

As for the house-fly, the protection of the house by screens over doors and windows, and the quick removal to the fields of the manure heaps, in which it breeds, will add not only to the healthfulness but to the general comfort of the home.

Open Mail

Primitive Science.

Sir:—Dr. Sambon, in his article last month in *The Public Health Journal*, suggests that the agency of rats and insects in spreading disease was known in remote antiquity. One is always prepared to hear that some late discovery of science was fa-familiar to the Greeks, and those most competent to judge are least inclined to dismiss the assertion with a laugh. In this case, however, the evidence adduced seems rather interesting, perhaps, than convincing, for the most part. The divine animals of Egypt formed such a large and miscellaneous collection of zoology that to suppose the cat, hawk and snake were included because they prey on rats may be thought a hazardous assumption. Egyptologists attribute the veneration of the scarabæus to a motive less practical, but far more dignified, than the grub-eating habit of its larvæ. The use of mosquito nets may well have been due to a mere human longing for comfort and peaceful rest. Miss Jane Harrison's learned and ingenious *Prolegomena* suggests other reasons for the adoption of a serpent as the symbol of health. And house-nolders in the Far East to this day cherish harmless snakes in the dwelling to keep down rats without any thought of combating disease — terrifying are the noises those useful reptiles make in the small hours to a newcomer unwarned!

It does not follow, however, that Egyptians and Greeks had not remarked a mysterious connection betwixt rats and fleas and plague. Mediæval regulations dealing with the epidemic, lately published, show that the civic authorities who framed them recognized this danger; and they knew little on such matters beyond the hints handed down from classic time. Indeed, there is reason to think that some savage peoples nowadays have more than a suspicion of facts which modern science has proved. In the earliest of his books, Richard Burton mentions that the Somalis told him the dreaded fever of those parts is caused by mosquito bites. The statement was positive. Burton naturally supposed that, if there was any truth in it, they mistook a coincidence for a cause—the fever is worst when mosquitoes are most troublesome. So he explained the case. "First Footsteps in Africa" was published in the forties. At the present time we know that the Somalis were right, whether consciously or no. Sir Henry Blake, when Governor of Ceylon, a few years ago, read a paper before the Asiatic Society, in which he alleged that Cingalese books of the sixth century name various classes of mosquito and distinguish those which produce the different forms of fever. In a recent work on Haussaland, the missionary author, whose name I am sorry to forget for the moment, declares that the native treatment of hydrophobia there is the same "in principle" as Pasteur's. We do not know how far the gentleman was qualified to judge, but the process must be remarkable, at any rate.

The beginning of every science is a marvel which grows more surprising the more one reads and thinks. But that of medicine is most wonderful of all. How did men learn to choose the particular herb or substance which would best relieve a particular malady? All races intelligent enough to see the difficulty have solved it by assuming a revelation—some God-instructed mortals. Even the negro supposes that his medicine man is inspired, to put it roughly. We cannot accept that explanation, and so we are left to credit that each discovery was made by experience. But how many generations of patient thoughtful men — rather women, perhaps — must have gathered the fragments of knowledge! And how hazardous the experiments must have been! Some 25 years ago an Englishman found great relief from a drug, new to the profession then, salicine. He learned that it was extracted from willow bark. The information interested his old housekeeper, for an infusion of willow bark had been the village remedy for rheumatism time out of mind. So it is in other places. I understand that, while various barks are useful, that of willow is best. Did the primeval practitioner try them all? But his reason for trying any is

not apparent, unless he had gone through the endless plants that seem more likely, in vain. It has lately been remarked that many of those mediæval prescriptions, so monstrously absurd or disgusting to us, are not altogether unreasonable, after all. The horrid ingredients supply in a measure those useful acids, alkalis, and so on, which we obtain, infinitely stronger, by chemical processes undreamed of then.

For instance, the *London Lancet* testifies that an old wife's remedy for ague—swallowing a spider and its web—is sound enough; the creature's body, and its web in especial, contain an albuminous substance closely akin to cinchona. Again, a decoction of toad, the favorite medicine for dropsy and other complaints, is justified on scientific grounds; in effect it resembles digitalin.

Notable among such eccentricities is Dr. Gaddesden's recipe for the treatment of smallpox, singled out for special ridicule these hundred years past, because that sage held the dignity of physician to King Edward I. One of the younger Princes was attacked. Gaddesden writes, in Latin: "I ordered his Highness to be wrapped in scarlet cloth, the bed and all the furniture of his chamber to be painted bright red, which practice not only cured him, but prevented marks. . . . I treated sons of the noblest houses in England the same way, and made good cures of all." One remembered this foolish fancy with interest when reading in the *British Medical Journal*, a few years ago, how the introduction of the "red light treatment" of smallpox, by Professor Finsen, had revolutionized the practice abroad. But how did poor old Dr. Gaddesden find the secret? In the curious work "Anglo-Saxon Leechdom," compiled by the Rev. Mr. Cockayne for the Master of the Rolls, it is mentioned that our forefathers pricked the pustules of smallpox with a thorn and rubbed in lees of wine. Authorities pronounce that such measures are commendable. One might suppose in haste that the use of a thorn was merely superstitious; but that is an unworthy suspicion, perhaps. The thorn would be antiseptic.

In all countries known to me outside Europe a proportion of the white residents, as intelligent apparently as their neighbors, incline to trust the native practitioner rather than their countrymen. Everyone familiar with the realms of savagery can cite examples. They are specially common perhaps in Africa. A Blue Book of 1905 reported the evidence of magistrates, missionaries and traders, chosen for long experience and intimate knowledge of the Bantu population, upon various questions submitted. All agreed, I think, that the Kaffir doctors possess secrets of the highest value—which proves the faith of these gentlemen, at any rate. In West Africa, the great majority of traders consulted the white doctor for form's sake in my time—it was the proper thing; but they put their trust in the black. It must be said, however, that they themselves were mostly half-breeds. Whilst I was up country, a genial young giant from Devonshire took the fever and died. His employer, Mr. Selby, informed me that he would certainly have recovered in the hands of the black women. "Then why on earth did you not call them in?" I asked. "How could I have answered to his parents?" Mr. Selby replied with emotion. "They would have charged me with murder!" It was a reason to dwell in one's memory.

There is much more to say upon this curious subject, but I must conclude with a story reported at length in the *London Lancet* of February 2, 1902. It had been rumored for years in East Africa that the natives had a cure for the terrible black water fever. Dr. O'Sullivan Beare, vice-consul at Bemba, was first apparently to think of investigating the report. He looked up the medicine men, who proved to be most obliging. They revealed the secret at once—it was a decoction from the roots of a certain cassia unknown to botany, named *C. bearcana* now in honour of this philanthropist. The remedy is so effectual that, if men still die of black water fever, it is because they cannot obtain a supply.

F. B.

The Importance of Inspection.

Sir:—More and more I am convinced that humane societies, in the discharge of their duties to the animals they have been organized to protect, must use the power committed to them, or the power it is possible for them to obtain, to protect at the same time the public health, if by no other way, at least by giving the largest publicity to the conditions they know exist where animals are killed for food, conditions that are constantly imperilling the lives of thousands and responsible for disease and death.

For the present I grant we must do whatever we can to lessen the evils that are a part of this whole wretched business of transportation with its inevitable cruelties. We must work for better stock cars, for a minimum speed law far above what we have now, for a larger enforcement of such legislation as we have already obtained. But we shall never solve this gigantic problem until we set before us the goal of the fewest possible miles of transportation for these creatures committed to our care, the slaughter of them as near the base of supply as may be practicable, and the shipment of their flesh in regrigerator cars to the markets of the world.

That ultimately it will be for the financial interests of the men engaged in the traffic to extend this method of handling their business to the utmost possible limit, I am confident, from conversation with large dealers, the facts now warrant. Take this single illustration: Last July a shipment was made from Chicago to Boston of 91 cattle as live freight. They weighed in round numbers 128,000 pounds. The cost of transportation was $50 more than it would have been had they come through as dressed meat, for as such the weight was but 78,000 pounds.

K. A. D.

City Health Maps.

Sir:—A map is an effective aid in the work of city health officials. It should be drawn on heavy cloth so that it will stand the wear for which it is intended, and made large enough to show every street, alley, crook and turn with exactness. The location of the factories may be painted brown, the parks green, the school buildings yellow, and the city and government buildings, blue.

By means of characters, or by small flags, the exact location of each case of contagious disease may be indicated as it is reported. Different diseases would be indicated by different colors. Also the stage of the malady would be indicated. That is, whether the quarantined person is convalescing, has recovered or has died.

If the map becomes thickly dotted with flags in one section of the city, the authorities would at once know that such locality is in an unsanitary condition and an investigation would be made. In this way, bad drainage, unsanitary water, or carelessness of the people could be better located.

C. J. H.

Sanitation and Civilization.

Sir:—The rains bathed original man. The winds swept his bone-littered caves.

But he became civilized.

The rains no longer serve him. He hides himself decently from public view and splashes about in a tub. He has come to scorn the wind-swept cave. He seeks the vacuum-swept flat.

So evolution has brought the question of sanitation. And that is a question of horse-sense.

It is neither comforting nor wise to dwell in filth. It causes us headaches and we die with much suddenness. Which isn't horse-sense. Most of us dislike headaches and most of us want to live.

So the problem of sanitation is one of law, or ordinance or health department regulation. It is merely one of proper living that we may be comfortable.

Some of us don't understand comfort. For instance, one man sleeps with his dogs. He recently explained to a health department inspector, that the warmth from their bodies gave him comfort.

In the aboriginal man we should have praised that reasoning. But the cave man dwelt by himself, and he didn't communicate the affliction of his dogs to his fellow-man. The fellow-man was too prone to smite him with a stone hatchet.

We no longer dwell alone and we no longer wield stone hatchets. We have substituted an indefinable something that we call "law."

We expect that law to prevent men from practising little diversions like sleeping with dogs. We don't object to the practices, particularly; perhaps they aren't anybody's business, anyway. But we do object to dining with the practitioners afterward, or buying our bread and our milk from them. So, in the name of public sanitation, our law should bid them take a bath.

C. A. P.

A Consideration of the Effect of Cold Fresh Air in Diseases of the Air Passages.

Sir:—Following my recent correspondence with you on this subject, let me point out that colds are infectious, microbic diseases, due to various organisms, many of which are always present in the mouths of healthy persons. Perhaps first in order of precedence is the influenza bacillus, which is commonly an outsider who descends upon the body politic at longish intervals in widespread epi-

demics. Then there is the pneumococcus, residing in the mouth, which often causes pneumonia when the host is "run down" and unable to make the ordinary resistance to invasion. Next comes some of the pus organisms. There are others, also, whose names and addresses are imperfectly known.

Ordinarily, colds are self limited diseases; that is, they run a definite course, when there are no complications, and disappear. They are never fatal, simply as colds, though a cold may start a disturbance that finally develops into fatal effects. Speaking by present knowledge, a cold is an infection of the membranes of the nose, gullet and throat that is not pneumonia, diphtheria nor any of the other grave disease in which some of the symptoms are present, and which ordinarily runs its course in about two weeks, for the most part in defiance of drugs. This limited duration is probably fixed by the time required by the human defensive mechanism to develop the resistance needed to overcome the invasion. Substantially the same characteristic of limited time duration shows in pneumonia, which is intrinsically a very severe cold "on the lungs," though this is not quite the whole story.

One sick with pneumonia reaches a "crisis" in the disease within about ten days from the onset, and thereafter gets well or dies, according to circumstances. In the cases that recover, the time up to the occurrence of the crisis apparently measures the time required for the body to make its defence effective. In the uncomplicated, plain cold, this time, as always noted, is about two weeks when—and this proviso is of little suspected importance with most persons—when the subject of the cold lives under ordinary conditions of indoor winter life in these latitudes. By proper treatment with plenty of fresh, cold air, the duration of what is usually a two weeks' cold can be cut down to three or four days.

Fresh air, for the purpose of this discussion, may be defined as outdoor air reasonably free from dust and smoke, and without any traceable taint, otherwise odor, from human or other animal bodies. The last specification may seem purely malicious, but it will presently appear to be quite otherwise. The dampness of fresh air is not of importance, provided the air is moderately cold. Here is the mechanism of the process, probably. It is unfortunate that the facts are not more fully known; but the following explanation is much better than guesswork:

Being in cold air, the human being has need of producing more heat to maintain the normal body temperature. Bodily heat is produced by oxidation within the tissues, sustained by the oxygen taken into the lungs as one of the components of the mixture known as air—air being about 20 per cent. oxygen and about 80 per cent. nitrogen, with traces of other matters according to varying circumstances. The need of more heat when in cold air results in a greater consumption of oxygen; hence in a more rapid and complete combustion, not only of the fats which the body devotes to heat production, but also of the waste products of all the bodily functions and those resulting from voluntary muscular movements—even to the matter of thinking. As a result, the chemical interchange and renovation, metabolism, is more than usually active and thorough. In addition, it seems fairly clear that the mere coldness of the air acts as a stimulant, and that so long as the body is kept warm, cold air tends to exceptionally thorough metabolism, largely by virtue of its coldness. This hypothesis appears to be strongly supported by proved value of cold, fresh air in the treatment of pneumonia.

Joined with the stimulation and active metabolism produced by good breathing of cold, fresh air is the absence of irritation to the respiratory membranes. Cold air rarely or never hurts healthy lungs and nasal passages; nor very often ailing ones. The result of this absence of irritation to "cold" infected membranes, joined with the renovating effects of the rapid oxidation of tissues due to the body's increased demand for heat, puts the body in the best possible state to combat the microbes whose invasion has saddled it with a "cold." In consequence, the enemy is more quickly and easily routed than when the body is confined to warm rooms, where the air affords no stimulus to the body reactions and may furnish unsuspected irritation to the infected membranes.

Persons of the necessary vigor and "constitution" may throw off a cold in a few days, even while living indoors, simply because their bodies are able to develop an effective counter attack on the microbes in less time than is required by the average

person. By way of "cure" for a "cold," cold, fresh air stands easily first, for easily understandable reasons, since the only real cure is the destruction of the abnormal bacterial growth. When this is stopped and the body is cleared both of the dead bacteria, their poisons and the body waste which has been imperfectly eliminated because of the disturbance set up by the "cold," the attack is cured. Quinine, so much used for colds, has only the tonic effects of cold fresh air, and not all of these. Certain other drugs also much used produce their effect, such as it is, by checking the secretions of the respiratory and mouth membranes; and this scantiness of moisture may hinder the growth of the microbes until the body resistance is capable of defeating them. Inoculation with a vaccine made from organisms such as may be supposed to cause colds is another but uncertain remedy. Other new ideas do not really cure; but may relieve the system from some of the clogging due to the disturbance and make the body more efficient in working the real cure, which is the destruction of the invading organisms by the body cells and by the defensive and bactericidal substances which the body cells may furnish to the blood and other fluids of the body.

This doctrine, that cold never causes "colds," is a favorite with those sometimes referred to as "fresh air fiends." It is rightly rejected by every one with wisdom enough to learn from his own experience. If by cold we mean chilling of the body or exposure, then cold certainly may cause "colds," just as chilling of the body may cause pneumonia. The explanation is too rational to be dodged. There are most of the time present in the mouth and nose organisms ready to extend their growth. Whatever lowers the vitality of the body tends to lessen the body's resistance to these organisms, which resistence ordinarily keeps them in check. By removing, or, rather by lessening, the usual body resistance, a chilling of the body may give these organisms a chance for the extended growth which causes the symptoms known as "cold." The mechanism of this lowering or resistance is a good deal more obscure than the fact itself. It is conceivable that some part of the weakened defence lies in a diminished activity of the leucocytes which are the scavengers and microbe devourers of the body. Such an assumption is entirely in harmony with what is known of body processes.

Since chilling of the body may, and does, cause colds, we should perhaps somewhat temper our indignation against persons who are afraid of "drafts." Meanwhile, the apostles of fresh air should charge themselves with the duty of explaining to unbelievers that fresh air ought not to mean exposure or chilling of the body. Proper clothing, even without the heat producing effects of muscular exercises, will keep the body safe in the coldest of fresh air, else the north pole would have stayed where most folks always thought it belonged.

B. B.

Meetings and Reports

DOMESTIC

Provincial Health Officer's Report for Nova Scotia, 1910.

We have received from Dr. A. P. Reid, the eighteenth annual report of the Public Health Department of Nova Scotia. The report is excellent in its style and shows the hand of an expert. Dr. Reid in addressing the Government in this report, says in part that the sanitary condition of the province has been, as usual, favorable. There have been many localized outbreaks of smallpox, though none have been severe. The public are loath to recognize the fact that smallpox has prevailed for several years past in different sections of the province and is likely to remain until all are protected by vaccination or otherwise; the sooner that protection becomes general, the sooner the disease will be eradicated, and this is specially needful with children—the earlier the vaccination the more protection will be conferred. No child should be allowed to attend school unless protected for many reasons, but the City Board of Halfax have encountered much unreasonable opposition, particularly from the anti-vaccinationists. These people may be sincere but they are ignorant of the experience of the world on this subject, or, at least, misinformed. There are 1,500 unprotected children now attending the Halifax schools —thanks to the "Conscientious Scruples," as by rule permitted.

Diphtheria, scarlet and typhoid fevers, whooping-cough, measles, infantile paralysis, smallpox, tuberculosis, pneumonia, etc., are also fully considered.

Dr. Reid requests in his report that it be noted "that though doctors differ, there is a very general concensus of opinion on every subject relating to public health and it is, hence, a safe assumption that they are correct.

Conadian Association for the Prevention of Tuberculosis.

The provinces and cities of Canada will be asked to send representatives to the Seventh International Congress of Associations for the Prevention of Tuberculosis, which will be held next September in Rome. This action was decided upon at a meeting of the executive of the Canadian Association held in Ottawa on the 28th of last month, when reports of a most satisfactory nature from all over the Dominion were received.

The Canadian Association will meet again at London, Ontario, on May 17, 18 and 19 next, when the speakers, it was stated, would include Hon. Clifford Sifton and Hon. Adam Beck. Those present at the meeting were Prof. Adami, of McGill; Dr. Bruce Smith, of Toronto; Dr. Laberge, of Montreal; Archbishop Hamilton, Mr. Jas. Manuel, Dr. C. A. Hodgetts, Dr. J. G. Rutherford, Dr. Montizambert, Mr. J. M. Courtenay, C.M.G.; Dr. Bryce, Dr. G. D. Porter and Sir James Grant.

Annual Report of the Canadian Red Cross Society.

We have received from Dr. Charles R. Dickson, General Secretary the annual report of the Canadian Red Cross Society. This Society is affiliated with the British Red Cross Society and is aiming to secure the nucleus of a complete organization in each portion of the Dominion of Canada.

The formation of provincial branches of the Society is now well under way. Prince Edward Island is in the proud position of being the first province to have a branch duly established and organized.

The annual report records the death of M. Henri Dunant, at Heiden, a health resort in Switzerland, on the 30th of October last. M. Dunant was revered by every civilized nation as the originator of the National Red Cross Society idea, and the founder of that International Red Cross Committee of Geneva of which each of the forty National Red Cross Societies, scattered over the world, is practically a

It might be interesting to those of our readers who have not been in touch with the affairs of the Red Cross Society to know that the Canadian Red Cross Society was organized in 1896 by Colonel George Sterling Ryerson. M.D., with the consent and approval of the National Society for Aid to the Sick and Wounded in War, as by letter of authority, dated at London, England, December 2nd, 1896.

The objects of the Canadian Red Cross Society are to collect funds and material and provide assistance in time of war, such aid and assistance to be supplementary to that furnished by the Official Naval and Military Medical Departments. The Society examines, systematizes and co-ordinates all offers of help in order to prevent waste and overlapping and render them of the utmost possible value, and, in time of war, co-operates with the Department of Militia and Defence of Canada or the British Red Cross Society The Canadian Red Cross Society was the first colonial branch established in any country and tendered its services to the belligerents in the Spanish-American War. The Society was also in the proud position of being ready for active work when the call came to Canada to assist in supporting the empire in the war in South Africa.

A Proposed Confession of Faith.

The proposed new Presbyterian confession of faith, as outlined by the Moral Reform Board during its recent meeting in Toronto, declares in part:—

(1) For the acknowledgment of the obligations of wealth.

The Board declares that the getting of wealth should be in obedience to Christian ideals, and that all wealth must be held or administered as a trust from God, for the good of humanity. The Board emphasizes the danger, ever imminent to the individual and to society as well, of setting material welfare above religious life. The Board protests against undue desire for wealth, untempered pursuit of gain, and the immoderate exaltation of riches.

(2) For the application of Christian principles to the operations of industrial associations, whether of labor or capital.

(3) For a more equitable distribution of wealth.

(4) For the abolition of poverty.

The Board realizes that some poverty is due to vice, idleness or imprudence; but, on the other hand, holds that much is due to preventible disease, uncompensated accidents, lack of proper education, unemployment, and other conditions, for which society is responsible and which society ought to seek to remove The Board believes in the maintenance of a standard of living, so that every person shall have sufficient air, light, food, shelter, comforts, and recreations to make the conditions of his life wholesome. The Board believes that, whenever possible, he should be led to earn these for himself and those dependent on him; but that when through old age, accident, sickness or any other incapacity, the family or individual is unable to become self-supporting, society should make adequate provision for them.

(5) For the protection of childhood.

(6) For such regulation of the conditions of the industrial occupations of women as shall safeguard the physical and moral health of themselves, the community and future generations.

(7) For adequate protection of working people from dangerous machinery and objectionable conditions of labor, and from occupational disease; for such ordering of the hours and conditions of labor as to make them compatible with healthy physical, mental and moral life.

(8) For provision by which the burden imposed by injuries and deaths from industrial accidents shall not rest upon the injured person or his family.

(9) For the release of the worker from work one day in seven.

(10) For the employment of the methods of conciliation and arbitration in industrial disputes.
branch.

(11) For proper housing.

The Board believes that all dwellings should be sanitary, that overcrowding and congestion of population should be prevented, and that tenements and apartment blocks should be so constructed as to allow a proper physical basis for Christian family life.

(12) For the application of Christian methods in the care of dependent and defective persons, by the adequate equipment and humane and scientific administration of public institutions concerned therewith.

(13) For the development of a Christian spirit in the attitude of society toward offenders against the law.

The Board holds that the distribution of

(13) For the development of a Christian spirit in the attitude of society toward offenders against the law.

The Board holds that a Christian society must seek the reformation of offenders, and that it must endeavor to prevent the commission of crimes by furnishing a wholesome environment, and by such education and corrective measures as will develop moral sense and industrial efficiency in the young.

(14) For opposition to vice.

The Board believes that the law of the land should vigorously combat the vices of drink, gambling, lust, and the abuse of narcotics, and that it is the duty of society to discover and remove the causes of vice.

(15) For pure food and drugs.

The Board believes that foods and drugs should be so inspected as to guarantee their freedom from adulteration, poisons and infection.

(16) For wholesome recreation.

The Board believes that the play of children and the amusements of adults are of great importance to morals, and that they should be brought under social control, so as to free them from the evil effects of unrestrained commercialism, and make them minister to the physical and moral well-being of the people.

Ontario Medical Association.

The thirtieth annual meeting of the Ontario Medical Association will take place at Niagara Falls, Ont., May 30th, 31st and June 1st, 1911.

The program for this meeting is a most interesting one. Some of the papers to be read, having a bearing on State Prophylaxis and Preventive Medicine, will be furnished by Major Lorne Drum, Ottawa, General Secretary Canadian Public Health Association; Dr. J. A. Amyot Toronto; Dr. J. Heurner Mullin, Hamilton; Dr. Chas. J. C. O. Hastings, Medical Health Officer, Toronto; and Dr. John Phillips, Associate Professor of Medicine, Western University, Cleveland. Another paper of the same class, entitled "Our Results with '606'," will be furnished by Dr. R. P. Campbell, of Montreal.

INTERNATIONAL

International Commission on Control of Bovine Tuberculosis.

A meeting of this Commission was held in Buffalo on February 27th. It was decided that the first task would be the preparation of material for a small pamphlet on the subject of bovine tuberculosis. This pamphlet is to be very simply and plainly worded, for the general public, especially stock owners. It is to embody a full statement of available information on the subject—so far as it concerns the stock owner in a practical way and so far as such information is accepted by the Commission.

This primer will probably be published in very large editions in the United States and Canada, and be given very wide distribution by the Canadian and United States Governments.

The committee entrusted with the responsibility of preparing this pamphlet is Dr. V. A. Moore, Cornell University; Dr. J. R. Mohler, U. S. Federal Bureau of Animal Industry; Mr. J. J. Ferguson, representing American Packers; Dr. Reynolds, Minnesota, representing American veterinarians in state work; Dr. F. Torrance, Manitoba, representing Canadian veterinarians.

The next meeting of this commission will be held at Toronto late in August.

International Municipal Congress and Exposition.

An International Municipal Congress and Exposition will be held in Chicago, May 18 to 30, at which the leading countries of the world will be represented. The German Government has ordered officials of German cities to prepare plans for civic centres and city beautiful plans. These plans are to be collected in the next few weeks and passed upon by the officials of the Government. The Germans are planning not only to beautify their cities but to obtain better light and sanitary conditions, and

their delegates to the International Municipal Congress and Exposition are expected to explain these plans in detail.

The Seventh Triennial International Congress on Tuberculosis at Rome.

The dates of the Congress are from September 24th to 30th, but the Social Hygiene Exhibition in connection with the Congress will probably open on June 1st and will continue until February 28, 1912.

This exhibition of Social Hygiene will, it is said, be the greatest of its kind that has ever been assembled. Among the different sections of the exhibition are those on tuberculosis, general prophylaxis, history of the hygienic movement, and the prevention of disease in general. The exhibition will cover a large area fronting Plazza Cavour.

The exhibition and Congress will be part of a general celebration extending over several months, to commemorate the founding of Italian liberty. The entire movement will be held under the patronage of the King and Queen of Italy.

International Sanitary Congress.

Following our announcement of last month regarding the International Sanitation Congress meeting during May in Paris, France, the following statement is issued officially: This new convention has seemed necessary because of last year's outbreak of cholera in Southern Italy, and the present epidemic in Manchuria, which recalls the worst days of the plague in India. These outbreaks, though tragical in themselves, serve a useful purpose by giving an opportunity for experiment with modern methods of relief and prevention. The last sanitation congress on cholera, yellow fever and the plague was held in December, 1903. Since then scientific progress has been rapid. The most recent discoveries and improvements must be adapted to the new needs, while adhering to the difficult principle—maximum safety with minimum regulation. To facilitate the work of the congress, the Government has ordered the permanent committee of the Office International d'Hygiene Publique to outline a programme for the discussions. Since its establishment in 1907, this committee has gathered and published complete data on all questions of sanitary organization. Its programme for the congress will be issued shortly and sent to the various governments that are invited to secure representation.

Dresden Hygiene Exposition.

Next month, on May 1, the great International Hygiene Exhibition in Dresden will open for a six months' showing in the interests of the public; an exposition that will present in a manner not hitherto approached the manifold phases of modern preventive therapy. The project is one that has been for years advocated warmly in German hygienic circles, and is on the point of splendid realization. As early as 1903, when sanitarians assembled in Dresden to view in the city the spectacle of the hygienic attainments of municipalities, the plan was broached of making hygiene the motif of a great popular exhibition. The idea was made an act when, in 1906, a preliminary convention was held in the Saxon city, a meeting to which the German Imperial and state governments all sent delegates. The choice of location fell to Dresden, centrally placed in Europe and already favored with a splendid exhibition ground, experience in expositions, and a host of workmen especially available through the setting up of other "world's fairs." Success was assured when his majesty the King of Saxony consented to be patron, and the Imperial Chancellor, von Bethman-Hollweg, was placed at the head of the honorary presidents, in which list appears the name of Robert Koch, and the royal state government furnished the material guarantee for the financial part. The city itself has given the use of a great exhibition building and the popular subscription of the citizens has reached beyond a million marks. The king, further, on information that the usual exhibition grounds would be insufficient in size, expressed his willingness to place a part of the royal gardens at the disposal of the exhibition. With the sinews of war thus provided for, the leading authorities in hygiene have come forward with a cooperation that has been notable, and the preparations are well in hand for the important showing.

It is more than 25 years since the last general exhibition was organized in Germany. At that time the science was in its infancy, and indeed no chair had been provided for it in any university. The change in the interim has been marvellous. Not only does every university possess its own hygienic department, but also in all civi-

lized states, stations have been erected for its study. Great discoveries, especially in the province of bacteriology, have to their credit the saving of hundreds of thousands of precious lives. Legislation now feels compelled to observe and establish the precepts of hygiene, the social ideas of the century have been led by hygiene into new paths, with new and important notions on the importance of the conservation of life and vitality. Irresistibly, hygiene enters into all the phenomena of human life and its realm expands from day to day.

Even for the specialist it is difficult to remain in touch with the science in its development. An exhibition of the kind is, therefore, of the greatest value in bringing together the results of the world's advances. The educational benefit of a great exhibition in which the results and asquisitions of recent investigation are displayed in a well-ordered, systematic whole, is hardly to be estimated. The interest does not rest at all with the specialist, for hygiene has come to be to-day of capital importance to the lives of the people, and they, in their turn, seek to know what has been accomplished. The popular import of such an exhibition is therefore its most valuable quality. It is of consequence in ways not instantly to be appreciated, but in one direction at least it will tend to the diminution of the feverish activity that leads everywhere to the over-taxing of strength so that the equilibrium of health seems at times to be in danger. Thanks to many circumstances, the present generation is in a receptive mood for instruction in hygiene. Man now realizes that good health is within his grasp and longs for instruction in the means of gaining and retaining it.

Twelve general divisions have been made of the scientific portion of the exposition, a further number of special ones, and a great consideration of the gymnastic relations in pastimes and sports. Air will be shown in its manifold relations to health, the changes through respiration, temperature, movements, climate and weather, and the action of impurities natural and artificial. Light will be shown in its effect upon organisms and the differential results of the various kinds of light; soil will also be shown in its relations to man, and disease and water as a domestic supply and in its relation to disease organisms. These four important items will form group one, with the great question of housing conditions and health in the second. This will be treated in the broadest possible manner, water supply and the disposal of the wastes being included, and also the regulations with reference to the dead. Group three considers foodstuffs and nutrition, the scientific value of foods and the practical handling of them. Clothing and bathing form an important section, and under professions and trades there will be brought together what the world knows of diseases of occupations and certain corollaries in the enforced conditions established for the care of the working classes. The latter will include protection against themselves in insurance and sick funds and against unscrupulous employers in regulations for factory and corporation house. Infectious diseases, nursing and aid, and children and adolescents, are likewise important groupings. Traffic and its relation to disease form group nine, which looks to conditions on ship and train as well as to the stations and guest accommodatrons, railway or governmental, and to the hotels and lodging houses for travellers. The army and navy will be grouped together and a large department will be in the interests of statistics. Special groups will centre about consumption, sex hygiene, alcoholism, cancer, oral difficulties and their prevention, with a measure of the progress of sanitation in a section devored to history.

UNITED STATES

American Women's Medical Association. The woman of 1911 wears more hygienic clothes than have appeared in many years. There is still plenty of room for improvement. That about sums up the conclusions of a competent jury, the committee on public health of the American Women's Medical Association. On the 12th of last month the members held their annual meeting in New York City.

"There are many unhygienic characteristics still disfiguring the present styles for women," said Dr. Belle J. MacDonald. "But what is encouraging is that our

clothes are so much more healthful than they used to be.

"Frankly, I am delighted with this newest importation from Paris, the harem skirt.

"From the standpoint of hygiene it is a capital innovation. In the first place, the trouser-like division gives perfect freedom of movement. But more important than that, the harem skirt will not drag going down steps, as even a short tailor-made skirt is apt to do. That is, the wearer will be freed from the collection of germs, dust and mud that is bound to gather along the bottom of an ordinary skirt. Also, on wet days the ankles will be protected from the chill caused by damp skirts rubbing against them. If all women adopt the harem skirt I believe they will be much healthier.

"Another modern innovation in clothes which all women should accept is the union underwear, at least for the winter season. Not only is it a great protection to the skin but it relieves the waist of extra bands and bindings.

"No woman who wishes to be well should wear a corset.

"The empire gown is a physiological success, hanging, as it does, from the shoulders and leaving the waist unconstricted. That must be the ideal of all women's garments of the future—absolutely no band of any sort about the waist."

"It's at the two extremities that the modern woman most risks her health," declared Dr. M. M. Vinton, of East Orange, N.J. "Her shoes are an abomination. The high heels are bad enough, but the thin soles are worse.

"The large hats are very bad for women's health, and so is the quantity of false hair they've been wearing in the last few years. The head becomes overweighted and overheated, and headaches and nervous troubles inevitably follow."

"I believe in the corset worn by the majority of sensible women to-day," frankly admitted Dr. De Witt Miesse, who comes from Pennsylvania. "It supports without constricting."

Dr. Mary D. Hussey, another representative of New Jersey, was optimistic. "Athletics are daily making women's clothes more rational and hygienic," she affirmed. "A woman is almost free to-day to choose her own style, and if she wishes she can combine beauty and hygiene in her costume. Many women do."

United States Cities and Sewage Disposal.

The scheme for dealing with the whole of the sewage from the city of Philadelphia has been advanced a stage by the construction of disposal works for dealing with the sewage from a small portion of the city as a preliminary additional experiment before coming to a definite decision as to the methods to be adopted for the whole of the sewage. In the present case the sewage from about 10,000 people, with a daily volume varying from 2,000,000 to 4,000,000 gallons per day, is to be purified, and the preliminary treatment will consist of sedimentation in tanks of the Imhoff type. The tank effluent, after flowing into a special dosing tank, will be treated upon percolating filters by means of fixed spray nozzles, and the filtrate will subsequently be passed through effluent settling tanks where provision will also be made for disinfecting the final effluent with hypochlorite of lime. This scheme promises to be very complete and efficient in every respect. The sludge will be dried upon special draining beds, which, in addition to the usual fine material and ample under-drains, will receive a top layer of sawdust. It is intended to remove the sawdust with the dried sludge, which will then be burnt under boilers or in a gas producer.

It is a sign of the times that Imhoff tanks have been recommended for the new disposal works at Atlanta, Ga., and for several other places, by Mr. Rudolph Hering, the eminent consulting engineer, as a result of his study of these tanks in actual operation in the Emscher district of Germany. The chief reason for the adoption of the Imhoff tanks by Mr. Hering is the facility with which the sludge is dried without creating a nuisance in the actual works inspected by him in Germany. Our contemporary, the *Engineering Record*, in a recent issue, also prints an article dealing with the various methods of converting sewage sludge into marketable manure and deploring the waste which now results from the discharge of enormous volumes of crude sewage into the sea or rivers by large cities such as New York and Chicago. It is evident that the sludge problem is becoming universally acute, and as this means that a satisfactory solution is being sought in other countries than our own, we may hope to see some successful results in the near future.

Summary of Columbus Housing Reforms.

No tenement nor dwelling house in Columbus may occupy more than 8 per cent. of the lot area when there is a street on three sides.

Corner lots cannot be occupied by a tenement or dwelling house to an extent over 75 per cent. of the ground area.

Interior lots which do not exceed 100 feet in depth cannot be occupied over more than 65 per cent. of their area.

It will be contrary to the provisions of the new code for a tenement or dwelling to be higher than the width of the street.

Behind every tenement or dwelling house there must be a yard extending entirely across the lot, under the new code.

The sizes of courts in future tenements and dwellings will be prescribed according to the height of the building.

Every court must be unobstructed at the top and be provided with a horizontal air-intake at the bottom.

Every apartment in every house built after the enactment of the new code must have one room of at least 150 square feet floor space.

No room is allowed under the proposed code of a size less than 100 square feet of floor space.

The total window area of each room in future tenements or dwellings must be at least one-eighth of the floor area.

Every toilet or bathroom, hall or alcove is required to have at least one window for sufficient ventilation.

Access to every living room and bedroom and to at least one toilet room in future houses must be without passing through any bedroom.

People will not be allowed to live in cellars and basements under the new code. These are for laundry and cooking only.

A proper sink for running water is required for every tenement and every dwelling house of the future.

Every house and every apartment in a tenement must be equipped with a toilet by the provisions of the new code.

Civic authorities will not allow a tenement to be occupied unless it has sewer and city water connections.

Tenement houses erected with more than three storeys will have to be constructed of fireproof material.

There must be two independent flights of stairs in every tenement that is occupied by two or more families above the first storey.

Tenement houses in the future will be required to have fire escapes constructed according to the height and width of the building.

Halls in tenements more than two storeys must be light enough to permit the reading of a newspaper at all times.

Every tenement house will in the future be supplied with sufficient water and accessible to each family.

Under the new code leaky roofs will be a violation of the law and water must be conveyed so as not to drip on the walls.

The owner of a tenement or dwelling will be held responsible for the accumulation of dirt, filth or garbage about the premises.

In any tenement occupied by six or more families it is required by the new code that a janitor be in charge of the premises.

THE EMPIRE AND THE WORLD ABROAD

Investigations in Bury on Defective Shoes and Health.

In Bury borough, England, Robert Burnet, M.D., health officer, has been giving some attention to the footgear of school children. There are two important relationships of defective shoes to health, one of them the effect on the individual and the other through the fact that such footgear is the cause of carrying much dirt into the schoolroom. The matter of keeping the schoolroom clean is serious enough under ordinary circumstances, for daily cleansings are very expensive, and it is the custom in England to have the thorough work done only at considerable intervals. The uneasiness of the children stirs up the dust, and with anything but the most modern construction there are abundant ledges on which this may rest ready to be disturbed

from time to time. There is a great addition to the normal import of dirt by broken or rough shoes and stockings, and what difficulties may arise in healthfulness, school dust under the conditions will greatly increase. In the examination of nearly three thousand children, six per cent. were found with defective clothing or footgear. A quarter of those whose records could be easily completed were from families of seven to twelve children, while two-thirds were from families in which there were four or more children. It is thus evident that an excuse exists for the larger part of the number. In connection with this investigation, Dr. Burnet finds that many children are undergoing what may be termed a "hardening" process, to which they seem to offer no complaint. This is due, no doubt, in many instances to the poverty of the parents or their indifference, and the knowledge on the part of the children that their complaints would be unavailing. "It is impossible to teach children effectively whose nervous energy is being exhausted in the effort to keep the body warm," writes this authority, "and in this connection it should be remembered that the child has relatively a greater surface for body cooling than the adult, hence the fallacy of keeping children in socks instead of stockings, or, in fact, subjecting them to any of the 'hardening' processes by limiting the amount of their wearing apparel."

In this connection the Lancashire working-people's familiar clog is far superior to the shoes in the opinion of hygienists, since the latter are far too often inferior in quality, especially the expensive kinds, and are ineffective in keeping the feet dry. On the other hand, the clogs make much more noise, but in a conference with the local teachers, the obvious advantages were found to outweigh this defect. In addition, in a moist climate like Bury, the clogs carry much less dirt into the recitation rooms. As many boys had dirty clothing as those with insufficient, but in the girls cleanliness was much more evident, and the ratio between dirty and insufficient was only about half. The girls' care was further shown by the fact that only one girl was ragged—and this at the age of five—while about a third of the boys were in this condition, mostly at seven and eight. In his inspection of the children, Dr. Burnet calls attention to the fact that vermin are attracted more readily and seem to thrive quite as well on some children, who may be kept just as clean as some others. The selection is usually determined by the presence of certain diseases or a condition of the blood predisposing them to disease. It is also true that dirt attracts vermin, and a normal clean child should not attract them so readily as a dirty one. The importance of an eye to these conditions in school children is the greater since the disease factor probably makes the verminous child a propagator also of disease. In the medical examination of the eyes, a large percentage, more than two, are troubled with strabismus in one form or another. The number of girls thus affected is about double that of boys. Some of the statistics with reference to defective conditions are interesting in that the number of children in Bury is sufficiently large to be a measure of the usual conditions, yet small enough to afford a pretty close examination. Four per cent. were found to be suffering with external eye disease other than squint, and eleven per cent. had defective vision. Fourteen per cent. suffered from ear disease, chiefly otorrhœa, and two per cent. had hearing affected, two-fifths of which were associated with adenoids. The record for the latter is large, seventeen per cent. of all the children examined. Two per cent. of the children were found to be backward, of which one-quarter were classed as defective. Tuberculosis of the lungs was diagnosed in nearly one per cent. of the children, and one-quarter of one per cent. had tuberculosis of the bones or joints. Rickets proves to be a serious matter in Bury, with seven per cent. of the school children suffering from the disease. The history of the majority showed them to have been bottle-fed. It is characterized by Dr. Burnet as a disease of the overcrowded town and associated with unsuitable food in infancy. The disease may be treated with success if taken in time, and it is the custom in Bury to visit the home of the patient, giving to the parents instructions for the cure or prevention. In Bury the practice obtains of furnishing food to school children, it being prepared at a central place and distributed to certain selected dining-rooms by street cars.

Pilgrim Vaccination in India.

The Commissioner of Police, Bombay, has sent the following letter, says *Times*

of India, on the vaccination of pilgrims in Bombay: I have the honor to submit a report by the Protector of Pilgrims upon the vaccination campaign which was instituted by us during the recent out-going pilgrim system. It will be seen that the total number of pilgrims vaccinated in Bombay was 8,278, or nearly half the total number that arrived in the city on their way to the Hedjaz. In view of the fact that this is the first year in which any organized attempt has been made to introduce vaccination among Hajis and that at the outset there was some opposition to the measure, the result may, I think, be regarded as very encouraging. Moreover, the letter which was addressed by the Government of India at the request of the Bombay Government to other local and provincial authorities asking that intending pilgrims from these parts might be warned of the desirability of getting themselves vaccinated before leaving their homes, produced an excellent effect and resulted in considerable numbers from Bhopal, the United Provinces, the Punjab and Hyderabad being vaccinated before they reached Bombay. These persons have not been included in the total of 8,278, which represents the number actually vaccinated within Bombay City limits. Thanks are due to the Governments of His Highness the Nizam and Her Highness the Begam of Bhopal, in that scarcely a single pilgrim was permitted to leave their respective States unvaccinated. If the numbers of vaccinated pilgrims from these States and the two provinces mentioned above are added to the local total of 8,278 the number of vaccinated would amount to considerable more than half the total number of pilgrims who passed through Bombay to Jedda.

Apart, however, from the actual numbers vaccinated or the percentage of successful operations, the work done by the pilgrim department is in my opinion valuable in that it has proved to be possible what has hitherto been regarded as an almost impossible task, namely, the vaccination of utterly illiterate and sometimes fanatic pilgrims from all parts of India, from China, the Straits Settlements, and Central Asia. In fact, when once the department and the brokers had set to work, no one responded more readily to persuasion than the Bukharis and the Javanese. Even the Moplahs of Malabar yielded readily to advice given in their own tongue. As the results are likely to be of interest to the Municipal Corporation, I venture to suggest that the above facts be made known to the municipal commissioner, whose vaccination staff certainly deserves great praise.

The Government passed the following resolution: "The Governor in Council desires to congratulate Mr. Edwards, his staff and the non-official gentlemen who lent their assistance, on the success of their endeavors to get pilgrims vaccinated before embarkation. His Excellency in Council will watch with interest the effect on the health of the returning pilgrims of these operations, and the subject should be specially dealt with in the report to be submitted at the close of the return season. A copy of the report and accompaniments should be forwarded to the Municipal Commissioner for the city of Bombay for information."

"Germ Carriers" in Australia.

The head of the Bacteriological Laboratory of the University of Melbourne, Dr. Bull, refers in his last annual report to the increasing importance attached by all epidemiological authorities to the "germ carriers" in the maintenance and spread of epidemic diseases. While examinations in regard to typhoid and tuberculosis had varied very slightly during the last five years, diphtheria examinations had increased from 655 to 3,956 in that period. The figures for 1908 were 1,792 while last year there was an increase of 2,065 on that total. This is no doubt due to the increasing importance attached by medical practitioners to the systematic bacteriological examinations of suspected diphtheritic throats, and indicates an active coöperation of the public health department and medical men in dealing with the problem of diphtheria prevention by the detection of "chronic diphtheria carriers." From a laboratory point of view this involves a very systematic examination of specimens, not only from convalescent patients, in order to ascertain whether they are free to mix naturally with the community at large, but also in case of diphtheria from the nose and throat of all "contacts." The amount of baceriological work required to deal with the detection of germ carriers, says an Australian contemporary, "is very considerable, but it is obvious that no me-

thod of dealing with infectious diseases, such as diphtheria, typhoid fever, and probably others, will be satisfactory and efficient which does not take notice of the importance of these so-called healthy contacts, who yet harbor virulent organisms, as a factor in the spread of these diseases. But the difficulty arises when we come to consider how to deal with these disease carriers. This is a problem which is engaging the attention of public health experts all over the world, and has not yet received satisfactory solution."

Hygienic Precautions in British Shaving Saloons.

Dr. Wolstenholme, medical adviser to the Salford, England, Hairdressers' Association, lately gave a lecture to the members, in which he dealt with what is known as a "clean shave"; he meant one that not only made a person look clean, but which left no disease behind it, and to this end the hands and all the appliances of the barber, as well as the face of the customer, must be free from germs which cause disease. He next gave a popular account of the general characters of bacteria, and pointed out that most of the diseases of special importance to hairdressers were due to germs which are always to be found on the skin, lips, hands, and mouth of both the hairdresser and the customer, and that to cause local disease there must be some abrasion or some irritation of the skin. It was also probable that the health of the person infected must be in some peculiar condition. The germs might be carried by any of the appliances used by the barber, such as towels, brushes, the fingers used in lathering, the razor, sponges, etc. He understood that the British Hairdressers' Association had made arrangements with the university authorities to make a full bacteriological inquiry to find out which of the barber's implements it was that carried the infection. In order to destroy the germs, he pointed out either heat or antiseptics might be used, but that both must be of considerable strength, and used for a sufficient length of time. Probably the best plan for all the instruments was to boil them for at least twenty minutes, and some inexpensive arrangement for use with a gas burner should be obtained. Towels should only be used once, and then washed and thoroughly boiled. The razor should be wiped, not on bits of newspaper, but on fresh pieces off a sanitary roll, and it should be sterilized by boiling for at least five minutes. A number of brushes and sponges should be kept, boiled each time after use, and then kept in a solution of 1 in 20 carbolic acid, or 1 in 1,000 perchloride of mercury, and rinsed out in boiling water before use. Some useful hints were then given as to the fitting up of a shop with a view to antiseptic precautions. Particular stress was laid on the fact that after a slight abrasion customers might often infect themselves by rubbing their faces with a dirty hand or handkerchief. As a styptic for a cut there was nothing better for general use than calcined alum applied on a piece of sterilized cotton wool. As far as ringworm was concerned, for practical purposes the barbers should act as if it were possible for ringworm of the chin to be caught from ringworm of the head or body. Combs should be soaked in 1 in 20 carbolic acid and rinsed before use, while scissors and clippers should first be taken to pieces and then sterilized by boiling. Referring to prosecutions against hairdressers, Dr. Wolstenholme said that in every case it was absolutely necessary for the barber to be able to prove that he had taken every possible precaution in sterilizing his implements and using antiseptics to prevent the possible spread of disease.

Commenting on the above lecture, the *British Medical Journal* says: "The interest taken in the use of aseptic and antiseptic methods has no doubt been stimulated by actions for damages brought against hairdressers. In some cases claims for damages made on account of skin diseases said to have been caused by foul shaves have little ground in fact, and in most cases there must be the greatest difficulty in proving that a shave was the direct cause of disease, apart from any pre-existing causes present on the customer's face. The possibility, however, is such that the hairdressers' associations throughout the country are evidently roused to the necessity of using more scientific methods."

The Dental Situation in Germany.

In an address awhile ago before a gathering of physicians in Berlin, Professor Dr. Jessen presented a review of the dental situation in Germany, the speaker being recognized as the leading authority on the subject in all Europe. "Until about the

year 1885," said Dr. Jessen, "the care of the teeth was completely neglected in Germany. While the other principles of general hygiene were fully understood and appreciated, dentistry still remained, so to speak, the stepchild of medical science. In 1884 the first dental institutes were founded in Leipsic and Berlin, and a little later in Breslau. Thus dentistry was put in the way of becoming a factor in raising the standard of national health. There is now a dental institute in nearly every university, but still there are many of them due to private initiative and some of them are still deprived of proper assistance from the State. The progress of the movement in Germany was far from coming into full swing, since institutions connected with universities must be used for scientific purposes and the training of students, and therefore could not go directly to the education of the masses. They could not lay directly before the people the importance of the care of the teeth in general hygiene, but they sowed the first seed in treating poor patients in the university schools."

The story of Dr. Jessen goes on to outline the rise of the present larger movement in the country, which includes schools, institutions and the army. In about 1890 Dr. Rose, of Freiburg, in Brisgau, began to examine school children and soldiers in order to establish statistics of dental caries among the people. By his reports he drew the attention of influential circles to the danger which through the teeth threatens the national health. A further step was taken in this matter by the Dental Policlinic of Strasburg University, which did not limit itself to examination, but considered treatment, especially the treatment of the poor gratis, children and adults. The immediate result was the slow development of the first municipal dental infirmary, which began its work in 1902.

In December of the same year Darmstadt opened a dental hospital for school children, founded by the Association of Dentists of Hesse, and in Hanover a similar institution had already been established by the local association, that of Niedersachsen. The country evidently was ripe for such a movement and during the next few years school clinics were established subsidized by the municipal authorities. Dental aid for school children has thus far been instituted in thirty-three German towns. Thanks to the influence of these as well as to the distribution of booklets on dental hygiene, not only the authorities and well-informed classes, but also a great part of the less wealthy population now thoroughly understand the importance of proper care of the teeth.

Some of the results of the investigations in Germany show the widespread character of dental defects. It has been proven by the inspection of more than 150,000 school children that on an average nine out of every ten have carious teeth. The figures are in striking confirmation of Dr. Jessen's own statements, when, in 1898, he found from an examination of ten thousand school children in Strasburg, that less than five per cent., one in twenty, had good teeth. "That such unhealthy conditions of the mouth must hamper materially the physical and intellectual development of the child, need no longer be debated, for authorities now agree that the oral cavity is the entrance-gate for many illnesses."

To what extent these injuries exist even in earliest childhood is a matter to which we are not as yet fully awake. The facts have been established in Strasburg, where the infant schools have been under inspection. There are 32 such schools, an old French institution, a relic of the Strasburg before the war of 1870. These infant schools had an attendance in 1908 of 4,371 boys and girls, of from three to six years of age, half of the children being examined by dentists. For the purposes of comparison an equal number of children of the next age-group, six to eight years, were examined. In the former group 9,427 defective teeth were found, and in the latter group, 11,701. Among the little children only sixteen per cent. had sound teeth, which decreased in the older group to only seven per cent. This tremendous increase of dental deficiency progresses steadily, if no check is put upon it. The changing of the teeth, which lasts from the seventh to the twelfth year, cannot put a stop to the harm, for the disease is contagious, and the second teeth are affected by the decayed milk teeth as soon as they appear. The result for many children is that when they leave school, the mouth is completely diseased.

It is possible to follow the course of dental disease in the male sex only through the statistics at the time of enlistment for military service. From this time facts and

figures are readily attainable. The percentage of men in the army with perfect teeth is not greater than six. When one realizes that the soldiers represent the selection of healthy and physically efficient men, and considers further the great number of men unfit for service, it becomes evident that the average of population with sound teeth must be much lower. "In the light of these facts," continues Dr. Jessen, "there can be no doubt that the school and the army must suffer, the more so since it is now known that defective teeth favor the spread of infectious disease to a considerable degree. The struggle by the authorities against dental diseases is therefore indispensable for school and army."

The school must lay the foundation—and this is equally true in this country, where the army is replaced by the host of business men to whom health means prosperity and progress individually, and whose prosperity means national advance. It is, therefore, the duty of the municipal authorities to look very carefully to the dental conditions in the schools and to provide means for their improvement.

What the cost may be is a matter not forgotten by Dr. Jessen. In Strasburg, under the favorable conditions which reduced the expenses, the care of the examination cost the municipality a little more than twelve cents a scholar in the year 1908. "Experience has taught me," said the speaker, "that every large town must pay one mark (twenty-five cents) per annum for each school child. This average should, however, be considered the maximum for carrying out the whole scheme." In this it would seem as if the speaker had included the fitting up of the municipal dental offices. Of course, these figures cannot be accepted for countries outside of Germany where all of the elements contributing to the matter may be under higher cost.

Fundamental to the general movement for the proper care of the teeth of school children is education. The first steps are to be taken by the teacher, who must instruct the children in the importance of the part played by the mouth and teeth in the whole organism. In Germany there is now plenty of material whereby the teacher may be made competent for this work of instruction, while there are also books and wall pictures for teaching the children. In Prussia an enactment of the Department of the Interior expressly requires that good, instructive pictures relating to the construction and functions of the human body shall be provided for every school. But instruction by itself is not the whole work, it forms only the foundation. The final aim must be everywhere dental treatment of the children, and for the poor children, this must be at the expense of the municipality. For large cities, dental infirmaries must be founded for school children. In the smaller towns it will be essential to appoint school dentists who may not be required to give their whole time to the work. Villages may find it advantageous to club together and pay a school dentist, who can go from place to place and thus create a "flying" clinic. For the smaller town a suitable room can always be found to serve for a school dental infirmary, but for the capitals, there must be a central institute with a branch establishment. Through the whole system, it is necessary to observe the children from their entrance to the school until they leave it.

The founding of school-dental-surgeries is, however, not all. The machinery is provided, but the patients are still to come. Parents and children alike are inert to novelties, especially in the way of medical treatment. The education in hygiene in the schools will be a great help, but other agencies must be invoked. Other social, beneficient institutions must exert their helpful influence. In Strasburg no child is admitted to the "holiday colony" without a certificate to the effect that its mouth is healthy while the four thousand kindergarteners are not admitted without having their teeth put in order. The same can be said of orphanages and institutions of the kind and of reformatories. As an additional argument showing the need of care of the teeth, Professor Miller, formerly of Berlin, proved conclusively that the mouth is inhabited by numerous micro-organisms, among which are many that occasion disease, such as those of tuberculosis. From an unhealthy mouth infectious diseases are not only carried down into the body, but may be coughed out or ejected and passed on to other persons. One of the most efficient means of preventing the spread of infectious disease must be to render the mouth healthy first of all. This can be obtained only for the generality of people by treatment of the teeth in the schools.

The novelty of the method is such that figures are as yet lacking to prove the effect of such work on the health of the community. But in the children in the German cities where a system of inspection has several years' standing, results for the better are evident. In one of these cities, the school inspector, Dr. Motz, reports in this fashion: "By means of the school and the school-dental-infirmaries, parents, children and teachers have acquired much clearer insight into the importance of the care of the teeth. An increase of physical strength and intellectual capacity is noticeable among the pupils and more time is gained for the lessons."

Social Hygiene in Wilmersdorf.

An interesting experiment in social hygienics is being made by the town council of Wilmersdorf, a flourishing western suburb of Berlin. In the belief that valuable aid can be given in the fight against tuberculosis by acquainting the people with the nature of the disease and by showing them the means of avoiding it, the council has opened an exhibition in the great hall of one of the modern high schools. The exhibition has been arranged and prepared by the Wilmersdorf Board of Health and the German Central Committee for Combating Tuberculosis, and its direction is in the hands of medical experts.

In one section the origin and spread of tuberculosis are explained pictorially in a manner suited to the comprehension of the ordinary layman. A second section contains anatomical preparations which show, on the one hand, the exact appearance in natural colors of various organs of the human body, and, on the other hand, the appearance of the same organs when affected with tuberculosis. A third section is devoted to the means of combating the disease. Tables are hung on the walls showing the favorable influence on mortality rates of social legislation and the eminent success achieved by the outdoor treatment for tuberculosis, so energetically championed by the administrative authorities of the State insurance funds for workmen.

The exhibition is open free to the public daily from three to ten o'clock, the mornings being reserved for the visits of pupils of both sexes in the two upper classes of all the municipal schools. Each batch of children will be accompanied by a teacher or medical men, who will explain the exhibits and their object. This idea of awakening the attention of young members of the community to the perils of tuberculosis and of preparing them at the start of life is much lauded by the newspapers. In the evenings popular lectures will be delivered of a social hygienic or medical character by authorities on the subject, one of the first being on tuberculosis and the care of the mouth, and another on centres of information for alcoholists and persons afflicted with tuberculous germs.

Vienna and High Buildings.

A commission of experts appointed to conduct an official investigation with a view of reforming the building regulations of Vienna has discussed the advisability of the erection of "sky-scraper" office buildings. An exhaustive debate covering the æsthetic, hygienic, technical and economical sides of the question resulted in the unanimous decision that such buildings would neither improve nor cheapen the housing conditions of the city. There are no "sky-scrapers" in Vienna. The height of the buildings along the widest thoroughfares does not exceed five storeys, and the authorities peremptorily refuse to permit a greater height.

Manchuria and the Plague.

A valuable paper on the outbreak of pulmonary plague in Manchuria was read recently before the French Academy of Medicine by one of the leading French medical scientists, Professor Chantemesse, who had prepared it in collaboration with his colleague, Dr. Borel.

Professor Chantemesse attributed the origin of the outbreak to the hunting of a species of beaver, known locally as the tarbagan, in Western Mongolia, to the east of Lake Baikal. This animal, which is found in great numbers there, and which is much sought after for its fur, is peculiarly liable to attack by the plague virus. This fact has long been known; and it is equally well known that in their haunts along several of the Siberian rivers they infect each other constantly. In the autumn of last year a number of trappers were engaged in hunting these tarbagan; and towards the end of October six of them, who had killed a large number and had handled their skins, were attacked, in succession, by an illness that began by vio-

lent fits of coughing, followed by an abundant expectoration of blood, and then by death. This was the pulmonary plague. The malady spread with fearful rapidity. The Mongolian peasants, terror-stricken, fled from their villages, and many of them, making their way to the railway that runs to Kharbin, carried the germs of the disease into Manchuria. There the Chinese received the infection, and suffered in enormous numbers; but they did their best to conceal the existence of the epidemic, and by this means precious time was lost in which it might have been possible to suppress the scourge there and then.

When, at last, the Chinese gave the alarm to the Russian authorities, the rigorous measures that were taken—the isolation of the infected, the burning of the dead and of contaminated dwellings, the institution of quarantine stations for those who had been liable to infection—could no longer cope with the epidemic. When an outbreak occurred at Wetianka, on the Volga, in 1878, the Russian peasants were absolutely inhuman in the violent steps they took to drive away from all human companionship people who had merely been in an infected area. And this was an outbreak of bubonic plague, which is much less infectious than the pulmonary variety. The Chinese peasant, on the other hand, rebels against all attempts at isolation; and the epidemic is spreading, not in a few scattered villages, as was the case in Russia, but in densely populated districts. The local conditions, too, are peculiarly favorable to the spread of the epidemic. Dr. Matignon, describing the condition of things in Manchuria recently, pointed out that, in the winter, the dwellings are crowded, every room accommodating a large number of people. Every door and window is kept tightly closed, and every opening blocked with paper. They are heated by a long, low stove that is used by everybody as a kind of camp-bed. Amid such surroundings any complaint that can be propagated by expectoration, or through the instrumentality of parasites, can hardly fail to spread rapidly.

The characteristic feature of the epidemic is the extreme virulence of the germ, and very few people who are attacked by it recover. In Manchuria, according to Dr. Paul Haffkine, pulmonary plague is produced by a bacillus that does not differ in species from that which produces bubonic plague. Many methods of treatment have been tried—the Yersin serum, collargol, the new "606" remedy, and others—but none have proved effectual. Of the crowd of patients whom Haffkine himself treated in the course of a fortnight, not one recovered; and the majority of the sufferers are men of from twenty to forty years of age, and those who have the slightest tubercular tendency become the easiest victims of the disease.

The rapidity with which the epidemic has spread has been remarkable. On October 29, on the Russo-Chinese frontier and Manchuria, 26 cases and 15 deaths were reported. Three days later 178 people had been attacked; by November 8 the epidemic had reached Kharbin; by the end of the month 526 cases and 524 deaths had been reported. Since then the victims have been numbered in thousands. On January 1 two cases developed in a train on the South Manchurian Railway, which is under Japanese management. By the 5th there was one case, and by the 8th there were 13 cases as Mukden. The Japanese are making desperate efforts to stem the spread of the epidemic, and the infected area is gradually being isolated, though the Chinese sufferers themselves put every possible obstacle in the way. The work is made difficult, of course, by the fact that the disease cannot be detected in its early stages. After many years of discussion and doubt, Haffkine has convinced himself that the period of incubation is six or seven days; and in that time, of course, an infected man may travel many thousands of miles, carrying the disease with him quite innocently.

It is not likely, however, that the epidemic will spread to very distant countries—to western Europe, for instance—though the danger would be greater if the epidemic worked its way stage by stage, establishing centres that came gradually nearer. The season of the year, too, makes this less probable, for, unlike cholera epidemics, which flourish in the summer, great epidemics of plague have always developed in the winter. A diminution of an epidemic by the return of warm weather does not necessarily mean its suppression, however. It is found that, in spite of every precaution, plague does not entirely disappear from a locality in which it has once been seriously epidemic—as, in the case of bubonic plague, we have seen in India and

in Egypt.

The principal method of resistance to the infection that is being employed in Manchuria is a double inoculation with bacilli that have been subjected to intense heat—a method introduced by Dr. Haffkine, who had used it in India. After the first infection several members of the medical corps died; but after the period of incubation that followed the second inoculation—the patients so inoculated, of course, being kept from all contagion during this time—all the 130 people who were thus treated had remained free from infection from the last week of December, when the inoculation took place, until the tenth of February, when the circumstances were reported, notwithstanding that they were constantly exposed to contagion in the performance of their duties.

Accident Prevention in the "Fatherland"

The loss through industrial accidents in Germany has been reduced fifty per cent. in recent years. This has been accomplished by the adoption of preventive measures, in the development of which Germany leads. The reason for the progressiveness of Germany in this respect is undoubtedly the compulsory accident insurance law, which furnishes employers a direct pecuniary incentive to reduce the number of accidents to a minimum. Under the administration of the act firms are classified according to the degree of danger involved in the employment, and accident insurance premiums are graded accordingly. If an establishment can make the conditions of employment safer it secures a better rating and lower premiums. This stimulus and preventive measures is one of the chief benefits to be expected from an effective workmen's compensation law.

In an article in *American Industries*, Dr. W. H. Tolman, director of the American Museum of Safety, tells some interesting things about German methods of accident prevention. He writes: "Practically all the German trade associations issue books and pamphlets with special hints and regulations for accident prevention. In addition to technical descriptions of the safety appliances themselves, the experience of the entire trade in dealing with dangerous parts of machines and processes is summarized for the benefit of the employer and his workmen. . . Attention is called to the fact that four recent accidents, every one of which could have been prevented by the use of a safety device, will entail payment of $40,000 upon the association, if the four crippled men live to the normal old age. The safety devices would have cost $210. Nearly all the trade associations issue special rules, pamphlets and posters directing attention to the danger and menace of alcoholism, especially during working hours; temperance in the use of alcohol at other times — indicating that it is not a food — the feeling of gayety induced is caused by a mistaken impression of the brain, and that it does not enable the workmen to do more; that the moderate use of alcohol is not so bad, but its abuse sent more than 15,000 persons last year to prisons and reformatories. . .

"Easily comprehended pamphlets call attention to hints and suggestions in the choice of a trade, showing that heart, respiratory, skin, and eye diseases are to be expected in certain trades, and that workmen predisposed to weakness in those occupational diseases should be very careful in seeking employment. The necessity of pure air as a counter-irritant of tuberculosis; cleanliness and regularity in the general manner of life, particularly of the mouth and teeth; the use of a bath once a week, otherwise two soap scrubs.

"These are some of the ways in which Germany is preventing fifty per cent. of the annual toll of industrial accidents. Popular lectures, the distribution of simple pamphlets and documents, are other methods. This educational propaganda starts in the readers placed in the hands of the school children, inculcating ideas of safety and caution at the very threshold of the child's life."

House Drainage in Bombay.

Under the auspices of the Bombay Sanitary Association, Mr. E. W. Fritchley, an architect of Bombay, recently delivered a public lecture on "Hints on House Drainage and Sanitary Fittings in Bombay," in the rooms of the Society of Architects, Hornby road, Bombay.

The lecturer in the course of his remarks said: The first point that occurs to one is the necessity of having the bores of the pipes perfectly smoothed and unobstructed, so that there may be no tendency for any matter to gather at any point of the pipe, and gradually to choke the same, and prevent a free discharge into the main

sewers. To secure this, great care should be taken during the laying of stoneware pipes to see that they are properly bedded in concrete, and also that the pipes themselves are from a good firm of manufacturers. The bore of the pipe, when laid, should be tested both by the smoke and also by the mirror test; the former is done by burning grass and wood shavings at one end of the pipe and carefully watching to see if the smoke escapes at any of the joints along its entire length, for, where smoke escapes, water is also likely to leak out and foul the ground around that point. The gradient of a pipe is another matter to which thoughtful attention should be given, for the steeper that gradient is the stronger will be the flow. The tendency of plumbers, so far as my experience goes, is to lay pipes as horizontal as possible, instead of taking advantage of every inch available for increasing the gradient. With reference to vertical down-take pipes, it is not at all uncommon to find them leaking at the joints. This is clearly a sign of bad workmanship, and as it is easily noticeable, the plumber who is found guilty of neglect of this kind should be brought to book by the municipal authorities. If plumbers were to feel that their licenses are likely to be cancelled when defects of this nature are found in their work they would probably be more careful in seeing that the work is properly done. I particularly urge this matter, because where water escapes foul gases also more readily escape, and the whole atmosphere around the building is likely to be vitiated thereby. The facility provided by cleansing screws for the cleaning of down-take pipes is one to which I would like to draw your special attention. Were the cleansing screws of Bombay pipes examined, it would probably be found that almost all of them are painted over, and no thought whatever is given to ever having them opened up. I would be strongly in favor of the municipal health authorities insisting that these brass screws be left unpainted, and also that at the final inspection made by the municipal authorities, before the usual occupancy certificate is given, each of these screws be opened up to see if they are in working order.

School Buildings in Bath.

With reference to the school buildings in Bath, England, Dr. W. H. Symons, school and medical officer, notes in his report that "we are very much behind the Continental standard in our school structures and in our standard of cleanliness for school children. The school bath has become a recognized feature in many countries." In Germany, it appears, there is no town having a public water supply, where some of the schoolhouses are not furnished with baths, and the children in schools not having a bath of their own are sent to other schools for their weekly cleansing. "An installation of shower baths need not be any great expense," writes Dr. Symons, "and I hope that Bath will follow the example of Bradford, St. Pancras, Manchester, Norwich and other towns in making arrangements for the regular bathing of all school children." The influence of the bath on the general health and capacity is too obvious and there can be no doubt about bathing being a true economy. With reference to the ventilation of schools, Dr. Symons advocates large window spaces in the school walls that can be opened. These should be so large that drafts will be avoided, there being a choice of openings so that a wind blowing directly in may be avoided. "We should make our schools approach the open-air school as nearly as possible."

"By attending to the personal cleanliness of the children," continues Dr. Symons, "including their teeth, and by letting them work in the fresh air, we shall do much to remedy those defects of nutrition and the incapacity for work and pleasure that the school inspections have brought so prominently before us." About two-thirds of the school children at Bath are poorly nourished, and it is not the children of the poorest families that are in this condition, but the children of parents who attempt to keep them respectable by keeping them in the house. A great benefit of fresh air in the school room is that when the children get used to it, they will soon demand of their parents fresh air in the home, and the parents themselves will be educated and the open window be in use everywhere. The common mistake is shown by this physician of keeping the windows open during the time the room is empty.

The air should be changed after the room has been occupied, but when the flushing is complete, the windows may be shut to let the walls and the furniture get warm. When these are of good temperature they will radiate gently for some

hours. Dr. Symons, by the way, registers an emphatic protest against the latrine as commonly in use in this country, being particularly offensive when, as is often the case, the supply of water for flushing is limited in amount. "We should see that the school surroundings are at least equal in decency to those of the average of homes." With reference to the open-air school in England, this writer gives a bit of the history. The first school of the kind, it seems, was provided by the London County Council at Bostall Woods in 1907. The school was opened on July 22 with 112 children. In 1908, similar schools were opened at Norwich, Halifax and Bradford, and in the intervening years many have been established.

Experimenting with the Berlin Waiter's Serviette.

Medical scientists in Europe are beginning to take a very antagonistic interest in the restaurant and hotel waiter's serviette, that handy and not always overly clean square of hemmed linen which the waiter carries over his arm and with which he dusts chairs, sweeps crumbs off the table, swishes flies away, polishes your plate, goblet, knife and fork, and sometimes mops his own forehead.

The crusade is being led by Professor Kron, of Berlin, who has been collecting serviettes after use by waiters and submitting them to microscopical inspection. He has pointed out the danger to health in using one serviette for so many purposes. Germs of disease have been found on these napkins after they had been in use for less than one hour. Professor Kron is in favor of laws requiring the constant renewal of serviettes, if the waiter must use them at all, and prohibiting him from using the serviette for more than one purpose.

A wise physician, skill'd our wounds
to heal, is more than armies
to the public weal.
—*Pope.*

George A. Auden.

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Special Articles

SEWAGE DISPOSAL SCHEME FOR INDEPENDENT HOUSES AND INSTITUTIONS

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A general recommendation of any particular sewage scheme, whilst undoubtedly serving a very useful purpose, always strikes me as savoring of the patent medicine style—a sure cure for all ills, no matter what their nature, and to be applied anyhow, inside or outside as may be most convenient. So with a sewage scheme, which by long experience has proved to be very good under certain conditions, but requiring modifications to suit local circumstances and even, in some instances, being entirely unsuitable.

With this proviso, as to its limits of usefulness, the following scheme, where properly installed, gives excellent results, and is a system suitable to most isolated or country houses, the quality of land available being the decisive factor as to whether this particular plant can be put into operation or not.

The question of quality of land may be settled very easily; clay, coarse gravel or a very rocky soil are not suitable, and, except by actually preparing a distribution bed, positively prohibit the use of this scheme.

The processes involved are the time-honored septic tank, and treatment of the resultant effluent upon land.

Although the processes are generally well known, failure to obtain good results when employing them, frequently arises through some fault or faults in their application.

For the benefit of those people who are interested and may be anxious to adopt a sewage scheme suitable in general to private houses with plenty of ground around them, I propose to give a brief outline of the essential parts and the methods of working them.

This system of sewage disposal is practicable, where the conditions of soil permit, for houses and institutions containing inmates up to the number of three or four

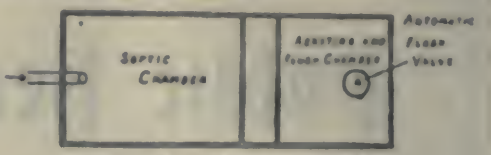
hundred. It can be applied to greater numbers than these even, but with the sewage of three or four hundred people to be disposed of, the amount of ground necessary for the distribution bed becomes rather large, and above this figure it is questionable whether it be not more economical to introduce some form of artificial beds, which can be accommodated in much less space. However, it must be borne in mind that the final effluent from a system of artificial beds is never quite as fine as one from a land distribution bed—this is a question to be treated of later. The dimensions of the septic tank and the distribution bed are directly governed by the amount of sewage put forth from the house or institution, and as a basis for calculation I have found it good practice to take the average daily output of sewage per capita for 24 hours, to be 50 gallons. In towns on this continent this quantity would be under the average, but in country districts where usually there is no public water supply available, this figure of 50 gallons is a very fair average.

Of course, if it be known that the per capita consumption of water is greater than 50 gallons, then the fact must be taken into consideration; in other words, if the water supply be known, the output of sewage will be the same for all practical purposes.

On this understanding then, the capacity of the septic tank must be such as to accommodate the whole output of sewage for 24 hours;e.g., if there be three inmates and an average output of 50 gallons of sewage from each, the total will be 150 gallone per 24 hours, and this would be the capacity of the tank, and so on for any number.

The shape of this tank must be oblong, about twice or three times as long as it is broad, with a depth of about three feet at its deep end. The object of this particular shape is to allow the solid matter in the sewage every opportunity of settling to the bottom of the tank, and to prevent it being carried through the outlet from the chamber, which is situated as far from the inlet as the dimensions of the tank will permit.

In this chamber, which we may term the septic chamber, the first important change takes place. The change is one of liquefaction of most of the solid constituents of the raw sewage, and is brought about by an army of microbes termed "anaerobes," *i.e.*, germs which live and propagate in the absence of air (oxygen).



Most of their work is completed within 24 hours, and any solid matter which they have not been able to dispose of within this period, simply remains behind in the septic chamber, there to undergo the process of liquefaction at leisure so to speak.

From ordinary house sewage, it is surprising how little solid matter remains at the bottom of the septic chamber, but on the surface of the liquid a thick scum collects in course of time, chiefly composed of fat and soap curd. However, this material does not cause much trouble, for from ordinary house sewage the quantity is such that it takes on an average two or three years before enough remains over from the liquefying process to necessitate a cleaning operation. However, this very fact brings out an important point in considering the disposal of sewage by the septic tank process, viz.: if by chance the sewage to be treated contains a very large amount of soap curd, then a cleaning out of the septic tank of scum will be necessary once or twice a year. I wish to lay some emphasis on this point, because I find in practice that people are very apt to let these sewage disposal plants go without any attention whatever: fortunately, in the treatment of the ordinary run of sewage the amount of fat and soap curd is moderate, and such that most of it is disposed of by the septic action due to the anaerobic microbes, and what little remains over is, comparatively speaking, so small, that it takes a year or two before the quantity attains such proportions as to necessitate a cleaning out of the tank. This amount of trouble and attention is really a very small price to pay when one considers the benefits accruing to people having such an installation for disposing of their sewage; indeed I know of no system suitable for small institutions, which, while being efficient, gives less trouble to keep in order. Unfortunately as yet, no scheme has been devised, which will run

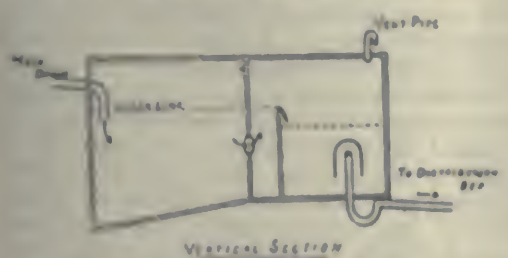
itself without being tended in any way.

So much then for the septic chamber—its work being to render into liquid form most of the solid organic matter in the raw sewage. The effluent from the tank differs markedly from the original raw sewage. It is a slightly turbid fluid, of a somewhat brownish or yellowish hue, containing only a moderate amount of solid matter in suspension, and this finely particulate. Its composition is fairly constant, being more or less the average of 24 hours and has most of the decomposable organic matter in solution, thus rendering the ultimate breaking up of this matter more easily attainable.

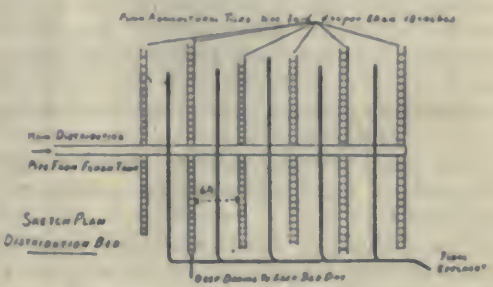
The process thus far has been "anaerobic" in character, and we can now dispense with the services of the anaerobic germs—at the same time we desire to call into requisition the "aerobic" bacteria, these germs requiring air (oxygen) in order to live and thrive.

It is to be borne in mind that both of these classes of germs are ever present in the raw sewage, and all we have to do is to place the sewage under conditions which will exclude the air, or allow its free admission, to encourage either the anaerobes or the aerobes respectively. In the septic tank we practically allowed only the anaerobes to flourish by the rigid exclusion of air.

The next step after the septic chamber, is to allow the aerobes to thrive, and this we do by simply admitting fresh air to the sewage in the aerating chamber, which incidentally is made to do service also as a flushing reservoir. This flushing process is a very essential part of the mechanics of the system and provides for the complete and even dosing of the distribution bed with the septic tank effluent.



A moment's consideration of the scheme of the septic chamber will show that the effluent will only flow out of the tank at precisely the same rate as new sewage enters it from the main drain, and as many people know, the flow of sewage from any dwelling varies enormously at different periods of the day, sometimes being only a mere trickle, and when this is the case, the effluent will be but a trickle also, and if allowed to run to the bed, would find its way entirely into the first part of the distributing area nearest the tank, so preventing an even distribution all over the bed.



The size of the flush chamber is therefore directly governed by the size of the distribution bed, and the best results are obtained when the bed is flushed once or at the most twice, in the 24 hours.

The capacity of the flush tank would, under such circumstances, be either the same as that of the septic tank, or half its size.

An automatic valve is placed in this chamber, which will release the fluid in full force, as soon as the flush tank is full.

There are several good makes of these valves on the market but those having no moving parts are the best, because any hinges, etc., quickly clog up owing to the corrosive properties of the effluent.

From the flush tank the effluent is conducted to the distribution bed by means of a water-tight tile pipe.

The main distributing pipe lies in the centre of the bed, and the branches come off on each side of this at intervals of not less than 6 feet—each branch should not be longer than 25 feet.

The whole of these branches, together with the central distributing pipe, are laid dead level.

The branches consist of plain agricultural tile, one foot long each, the joints being left open about a quarter of an inch, laid in a trench 12 inches deep, and two to three feet wide. The trench is then filled with small clinker cinders.

The agricultural tile are 4 inches in diameter, and, being a foot long, will hold approximately half a gallon. On these data the number of tiles required can easily be calculated, to accommodate the amount of effluent coming from the flush tank at one flush.

These superficial pipes are the true distributors, but in order to prevent the ground becoming water-logged in any way, it is necessary to instal a system of deep drains. These consist of ordinary agricultural tile laid at a depth of 3 to 4 feet, in the intervals between the superficial branches. These deep drains must have a slight fall in order to keep them free of water, and are joined up at one end leading to the outfall.

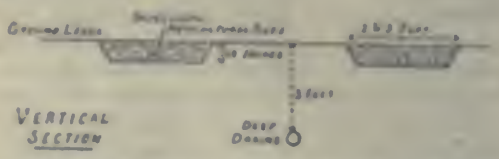
All these details will be more readily grasped by a reference to the accompanying plans.

The following description will explain the purifying process which takes place in the distribution bed.

The aerated tank effluent is introduced in a thin sheet to the bacteria lying in the superficial layers of the soil. They are, as we have seen, true aerobes, and naturally will be found more abundant nearest the actual surface; this fact is very important to remember, because, in digging the trenches in which the superficial pipes were laid, the depth was never to exceed 12 inches. This is for the reason that the aerobic germs do not exist in any numbers in the soil deeper than 12 inches.

The tank effluent fed to these aerobes contains a large amount of decomposable organic matter in solution, and their special role in life is to dispose of this material, converting it into simple salts and water. The salts are held in solution in the water, and carried down through the interstices of the soil, until the water reaches the deep drains, when it appears at the outfall as a clear liquid, possessing no smell or other objectionable qualities, in fact being indistinguishable from ordinary water. This remarkable final change being brought about by the aerobes in the upper layers of the soil.

The soil richest in these aerobic bacteria is a good porous loam; gravel and pure sand contain comparatively speaking, none. Clay is a very bad soil to deal with under any circumstances, because it is very nearly impervious to water, thus preventing that natural and necessary percolation taking place which has been referred to already.



The final effluent from one of these small plants, properly constructed, is a very fine one indeed; as a matter of fact I do not know of any other process or system of sewage purification which will give such a high standard of purity as regards the final effluent. The only unfortunate circumstance in this respect is the inapplicability of this scheme to large amounts of sewage; the land requisite mounting up to impracticable proportions in those cases where large amounts of sewage have to be dealt with.

Another point worthy of notice, is that these plants are suitable to all climates, hot or cold. No fears need be entertained about frost; although the distribution bed is so very superficial, the pipes never freeze up, the effluent from the tank is always warm, and by the time it is cooled down, it has gone down into the deeper layers of the soil where the temperature is above freezing point.

Again, these plants have another recommendation, the tanks are all beneath ground, and the distribution beds are not unsightly at any time, and may even be incorporated into an ornamental garden scheme. As a matter of fact, the cinders are the only part visible in the whole plant.

I have installed a good many of these plants during the last twelve years, and in only one case has there been any complaint whatever. In that instance, the plant was virtually ruined by the owners hitching up a big laundry to the drainage scheme, and from this laundry there was turned out such a tremendous quantity of soap curd, as to clog up the distribution bed; some slight idea of the quantity of soap curd produced may be formed, when I state that over a ton of soap was used annually in that laundry.

SCHOOL INSPECTION AND THE PUBLIC HEALTH SERVICE

By GEORGE A. AUDEN, M.A., M.D., D.P.H. (Cantab.), M.R.C.P. (Lond.)

Coming amongst you, as I do this evening, a stranger and sojourner, it is not an easy matter to find a subject upon which I can speak to you without presumption. As the subject of school hygiene is one of the latest developments of preventive medicine, I propose to deal with the relationship of school hygiene and medical inspection of school children to the general public health service and, attempt to show the close interrelationship and vital connection which must exist between them. I have heard it stated in England by persons ignorant of the conditions, the scope and the possibilities of the movement, that medical inspection of school children is the latest fad, founded upon the movement towards a benign state socialism, and that it is a death blow to parental responsibility for the physical welfare of their offspring. Those who make statements of this kind betray an ignorance of the trend of civic government to-day and a refusal to acknowledge the tremendous possibilities for social progress which medical inspection affords.

That "the child is father of the man" is as true of physical as of moral and intellectual development, and we shall all be in agreement when we state that at the foundation of all true national progress lies the problem of the child, its health and education.

No high ideal of citizenship can be attained unless we direct our most strenuous efforts to assure a healthy childhood. We may, perhaps, this evening, regard ourselves as standing upon some exoteric eminence whence we can survey the whole stream of child-life, flowing as a river from its tiny beginning in the cradle to the great sea of industrial life. It is of no avail to attempt to purify a stream if the source be a polluted one, except by purifying the source. The child must be the centre of interest and his well-being the end and aim of reform. If we look back upon the evolution and development of the public health service, we cannot fail to recognize that there has been a remarkable shifting of the centre of gravity in the attitude of Boards of Health from the consideration of the environment to the consideration of the individual. Medical health officers are to-day less concerned with problems of water supply, sewage disposal, etc., than with the attempt to grapple with the infant mortality, the prevention of tuberculosis and zymotic disease. In this regard of the individual, medical inspection is destined to play an increasingly important part, its foundation must therefore rest upon the broad basis of public health, as an integral part of the great nexus of ameliorative agencies which are at work. The school lies midway between the state and the home, and it is through the school that it is most feasible to reach the home, to gauge its condition, and to remove to some extent at any rate, the evil results of those conditions. It is, moreover, the training ground of the parents of the future and the seeds of intelligent instruction sown here will fructify and yield a harvest of health for future generations. At present only too often "The hand that rocks the cradle wrecks the world." Speaking of conditions in England, the external environment has been improved beyond all knowledge within the last fifty years, and the diseases which were associated with environment have largely vanished. Typhus, relapsing fever, enteric fever, malaria, and even scarlet fever have vanished or have been largely reduced in frequency and severity; yet our infant mortality has remained the same year in and year out, thus proving that the causes which produce our high infant mortality rate are less environmental than personal, and are due to conditions in the homes and habits of our people. This is clearly seen by a comparison between the various mortality rates of rural and urban districts, or, still better, between the rates of different areas in the same city.

Year by year we in England and Wales

Being an abstract of a paper read before the Academy of Medicine, Toronto, April, 1911

sacrifice 150,000 children to this grim Moloch — what a hecatomb of human life; what a mass of futile pain and sorrow is here revealed. There might be some solace in the thought, if these were only the weakly and less fit of the infants born into the world, and if it could be felt that by means of the conditions which lead to infant death, Nature, "red in tooth and claw," secured the survival of the fittest to carry on the struggle into after years. But there is no ground for this comforting assumption. On the other hand, the damaging and devitalizing conditions through which our children pass leaves them marked and seared by the struggle through which they have passed, and so long as we allow those conditions to continue we cannot hope to secure a high physical standard of fitness in the coming generation. Those of us who have had any large maternity experience will recognize the truth of the assertion that, inherited disease excepted, all babies come into the world endowed with the same physical possibilities, it is the conditions of the home in which they are born which very largely determine the issue of the struggle to secure a foothold in the ascent of the ladder of life.

I have laid stress upon the question of infant mortality because the study of infant mortality is the necessary preliminary in the study of child disease, and because "the wounds and reddening scars remain" to be seen in school life. There is clear and definite evidence that the physical condition of school children born in a year in which the infant mortality rate is high is less satisfactory than that of the children born when the infant mortality rate is low. As Dr. Kerr has well put it, "The greatest effect upon the life capital of the nation is produced by the infant mortality." My own investigations in Birmingham point to the truth of this assertion. "It is the conditions which surround the child from its birth onwards which largely determine the results found on medical inspection when the child reaches school age and no attempt to grapple with the defects revealed thereby can exclude the consideration of the wider problem of causation which is involved."*

There is one other point to which I wish to direct your attention, I mean the necessity of establishing a complete confidence and co-operation between the medical practitioners and the medical department of the Education Committee or Board of Education.

The introduction of the school doctor into the scene must profoundly modify the curriculum, for it allows an increasingly definite classification of the children in accordance to their physical and mental capacities. The blind and deaf receive further subdivision into the partially deaf and partially blind with their own special needs of a modified curriculum. The progressive myopes, and recurrent keratitis—the stammerers and stutterers and the hard of hearing; the epileptic of normal intellectual attainment; the choreic child or the child of organic heart affection; the weakly or pre-tuberculous child, and so on. The proper classification of these children can only be obtained by the establishment of mutual confidence and complete co-operation between the school medical officer and the medical man under whose care the children have been placed. In this way each medical man is brought through the medium of the school into more close and intimate touch with the general system of public health service than has ever before been possible, and he thus has it in his power to serve the best interests of his patients, as well as those of the community at large. So often with us in England the failure to appreciate the actual conditions of school life and of a careful weighing of the immediate and ultimate value to the child leads to much absence from school, which is often very prejudicial to the ultimate interests of the child.

Or, let us look at another aspect of this problem, arising out of the infant mortality question.

When we examine the children in our schools we can roughly divide the defects found into three main groups:

(1) Sense defects and imperfections; mental deficiency; visual defects; deafness defects which come into prominence chiefly because of the influence they exert upon the educability through the absence or deficiency of the senses.

(2) Contagious diseases, which may be regarded as the accidents rather than the consequents of school life. These include the zymotic diseases, ringworm, parasitic diseases, etc. To this group we shall return later on.

(3) By far the most important group of

* Report to the Education Committee, Birmingham, 1911.

defects are those which are due to conditions antecedent to school life: Rickets, malnutrition, glandular enlargements, adenoid conditions, tuberculosis lesions, infantile paralysis, congenital deformities, bronchitis, bronchial catarrh, and the sequelæ of diseases. In other words, these defects are in a direct continuity of association with those conditions which lead to a high infant mortality rate, and a high death rate of children prior to school age. These are first revealed by medical inspection, but medical inspection comes too late to remedy in a large number of cases. If a remedy is to be sought, it must be before the children have reached school age. If medical inspection merely means that a larger number of children will receive spectacles or will be relieved of their supra-abundant tonsillar tissue, it will fail of its great opportunity. It must aim at cutting off the source of supply of defects and must go further back: to the homes of the people. In the words of Sir George Newman, M.D., Principal Medical Officer to the Board of Education, to whom in England the organization of medical inspection of school children owes so much: "It is clear that in the age-periods of childhood after infancy we reap a harvest of disease for which we have sown during the infancy period. First, we get many of the actual diseases of infancy continued into the late periods of childhood; secondly, we get the sequelæ of those diseases in the survivors; thirdly, we get a continuance, varying in degree and extent, of those causes and conditions which in infancy yield our high infant mortality rate and in the long run bring about a degeneration of race. If in this way we take a long view of the matter we shall see that an improved physical condition of the children of the nation depends upon our grappling with the problem not only from the beginning, or in other words, with infant mortality at its root, but *grappling with it as one problem.*"*

In regard to the second group, that of the contagious diseases, their relationship to the general public health service is so clear that we need not dilate upon it. The elementary school is not a clearing house of infectious diseases, as has been supposed. Dr. Kerr has, for example, shown from the Registrar-General's statistics that prior to 1870, when the first Education Act was passed, the incidence of scarlet fever was greater amongst girls than boys, although a much larger number of them were engaged at home and did not attend school.

Or take measles, which reaps so rich a harvest in the early years of life and sows the seeds of further disease, which swell the death rates of subsequent years and are productive of so much ill-health amongst the children; bronchitis, broncho-pneumonia, tuberculosis. In 1907, measles was the direct cause of death in England and Wales of 11,712 children under five years of age, while broncho-pneumonia and bronchitis claimed 30,144 deaths at the same age. It is chiefly through the schools that we may hope to control this disease and attempt to reduce this mortality, for it is only through the schools that we can gain knowledge of the spread of the disease. Close your schools and at once the only knowledge of the incidence which is accessible is that furnished by the death returns. This is surely like locking up the stable when the horse is stolen.

If we turn to tuberculosis, we find the same interdependence. Tuberculosis has been described as a disease of ignorance rather than a disease of poverty. It is not a disease of school. Our English statistics point to about 1 per cent. of children in elementary schools suffering from pulmonary tuberculosis. Under modern conditions of school attendance, with the attention to ventilation and floor space per child, pulmonary tuberculosis cannot be considered a school disease. It is essentially a disease of overcrowding and still more of close personal contact with an actual sufferer from the acute disease. Of 254 children whom I have under my repeated observation as showing suspicious symptoms of pulmonary disease, by far the greater portion come from homes in which there is or has been recently a sufferer from phthisis. If we segregate the adult sufferers we shall practically cease to see pulmonary tuberculosis in our schools. Here, again, we must go down to the home.

These examples will serve to illustrate the nature of the problems met with in medical inspection of school children. School hygiene cannot be regarded as a subject *sui generis* limited to the sphere of school life and school premises, but it is an integral factor in the activities which promote the well being of the nation. The essential unity of the problems revealed calls for a unity of effort to deal with

*Newman Journ. Roy. San. Institute, Vol. XXX, p 431.

them, and no administration in water-tight compartments can be permanently satisfactory.

There is one other point to which I wish to draw your attention, because of its supreme importance to the national development, and because the opportunity, if once neglected, will vanish never to return. In Canada you have the opportunity of securing a healthy and a satisfactory environment, such as in the Old World we can never see again. The slums and courts and alleys which disgrace our cities and manufacturing towns need never have come into existence. When I say that, where some of our worst slums in Birmingham stand to-day, a century ago were market gardens, you will understand what I mean. By securing a healthy and satisfactory environment for your citizens you will do much to remove the antecedent conditions which tend to disease and distress, but it cannot be too strongly urged upon your notice that the attempt to secure the racial fitness of the nation by purely environmental reforms alone and the removal of the mother and child from unhealthy surroundings will be vain unless you have regard to the nature of the stock from which they spring. Nature is stronger than nurture. If your stock is degenerate, your future citizens will be inefficient. A healthy childhood springing from a sound parentage is the greatest economic asset of a nation.** In England, in our efforts to ameliorate the lot of the weak and inefficient by environmental reforms we are in danger of penalising the sounder stock. We have not only hindered nature from weeding out our social wastage, but we have made the conditions increasingly favorable to the multiplication of this degeneracy, and are producing a population of lower average fitness. "Parentage and motherhood have been placed at a grave disadvantage in the battle of life relatively to childlessness. The child is economically a commodity which, like other wares, is produced to meet the demand."* It has been stated that a high birth rate connotes a high infant mortality rate, but there need be no relationship between the two. By securing a healthy environment, and a sound education in healthy habit and conduct, much may be done to reduce the latter, but the chief thing will be lacking if there is not, in addition, a healthy motherhood. See to it that the former is encouraged.

REDUCING INFANT MORTALITY.

By BENJAMIN A. GOULD, A.M. (Harvard)

In these days when a diminishing birth-rate is occupying the attention of the governments of many countries, it is of increasing importance that the death-rate of infants should be reduced to as low a point as possible. Much has already been done toward this end, but the mortality of infants under two years old is still alarming.

By far the greater part of this mortality is caused by malnutrition. The deaths from other causes are becoming better and better controlled, and the advances made in municipal sanitation and the increasing knowledge of sanitary requirements is aiding greatly along these lines. The most important need, however, is for better nutrition for the infant until it reaches the age when it can use the ordinary foods of the household.

There is, of course, nothing superior to the mother's own milk, provided that it is normal and sufficient in quantity and that the infant is normal. The number of mothers, however, who are either unable or unwilling to nurse their children is far greater than in the less complex conditions of society a few years ago. Again, the milk of the mother cannot be varied to suit any peculiar needs of a child not entirely normal in its digestive functions, and furthermore, many mothers are unwilling to adopt the strict and systematic diet necessary for the best results for the child.

Up to very recently there has been no

** "The Problem of National Eugenics," Prof. Karl Pearson. * Loc. cit., p. 29.

prepared food which conformed to the needs of the infant. By far the best of the artificial foods has been a split-proteid modification of cows' milk prepared in a milk laboratory. The chief trouble with this food is the difficulty of obtaining it except in large centres; the necessity of obtaining it with great frequency to have it always fresh; the difficulty of keeping it in proper condition, and the price which makes it entirely beyond the reach of any except the wealthy classes. The so-called home modifications of milk are almost always unsatisfactory as they not only have all the drawbacks incident to the use of the ordinary milk obtainable by the ordinary householder, but also are usually thoroughly unscientific. The modification usually consists in decreasing the casein content by dilution with water and then building up the sugar content by the addition either of cane sugar or commercial sugar of milk and the addition of cream to increase the fat content. This, however, not only does not increase the important albumen content in the cows' milk, already deficient by one-half as compared with mothers' milk, but even further decreases it by the dilution with water. It is also deficient in ash. The only correct modification is by whey, whereby the lact-albumen content is increased, the casein diminished, and the ash maintained. But even this may contain too small a total solid content for an advanced infant owing to the large amount of water in the whey. The total solid content cannot be varied at will.

It is hardly necessary to speak of the unsuitability of the ordinary prepared infants' foods. Practically all of them have a cereal base, and contain a considerable quantity of starch. In some the starch has been altered to maltose, dextrose, or some similar starch derivative, but this does not and cannot take the place of lactose, which is the natural carbohydrate for the infant. The continued use of a food containing a predigesting agent such as pepsin or pancreatin endangers the ability of the child to assimilate unpredigested foods when their use becomes necessary. Again, these foods without exception have been sterilized and lack the antiscorbutic properties of a fresh food. Even those which are known as milk foods and which contain a greater or less quantity of the solids of milk have in all cases been sterilized, the result being that the natural enzymes of milk have been destroyed, a certain part of the salts has been rendered insoluble and unassimilable, and the milk albumen has been coagulated and rendered insoluble. Where commercial sugar of milk has been added, the process of refining has unquestionably destroyed some of the natural qualities of lactose present in fresh milk and the food value of a synthetic combination of commercial sugar of milk with other food values does not produce the same results as the natural lactose in the fresh milk.

Recently a process has been perfected of reducing milk to powder by spraying the milk in a spray so fine as to be practically a fog into currents of heated filtered air. The latent heat required for the rapid evaporation which takes place is supplied both from the surrounding air and from the solid content of the minute particles of milk suspended in the air, so that the milk is actually cooled by this drying process. Every other system of drying milk depends upon bringing the milk into contact with heated metal surfaces, and in every case results in raising the temperature to a point where the milk enzymes are destroyed, the milk salts—especially the bone-making calcium compounds—altered, and the milk albumen coagulated and rendered insoluble. Under the spraying process, however, none of the above objectionable features exist.

During the past year several hundred cases of infant feeding with modified milk powder made by the above process have come under the writer's supervision, and the results obtained have been such as to lead to the belief that a radical advance in infant feeding has been made. The milk has been obtained from inspected dairies in one of the best milk-producing sections in Canada and the modification has been made under laboratory conditions with a rennet-precipitated whey made from sweet milk to give the proportion of about three parts of whey solids to two parts of milk solids. This makes a modification approaching nearly to mothers' milk, as it contains slightly less than one-half of the normal casein present in cows' milk and more than twice the milk albumen. The modified milk has been lightly pasteurized to a point sufficient to destroy all pathogens but not to a temperature

high enough to destroy the enzymes or to coagulate the albumen.

In every case of a normal infant this food has given satisfactory results when intelligently used. Not a single case of rickets or scurvy has developed, and in many cases the infants have been fed exclusively upon this food for upwards of a year. The high ash content has resulted in unusually good bones and teeth, and the easily assimilated albumen and the proper proportion of casein have made firm and healthy muscular development. By using a sterilized water to dissolve this modified milk powder all danger of bowel trouble has been eliminated, and the infant has made a steady and continuous progress. The best results have been obtained where the child has been weaned on the modified milk powder, using it for two or three weeks as an adjuvant to breast feeding. The food is also more easily prepared than any other, requiring only to be dissolved in sterilized water at the feeding temperature.

In cases other than normal, where the digestive functions of the infant have been impaired by attempting to assimilate other foods, it has in a number of instances been found necessary to feed the child temporarily upon a whey powder made by the same process. This whey powder is practically free from casein and fat, but contains a very large percentage of soluble milk albumen, of ash, and of lactose. The milk albumen is so easily assimilated that even the weakest digestion can obtain a sufficient amount of protein to carry the infant along until it is able to take either the straight modified milk powder or a solution containing part modified milk powder and part whey. In certain very difficult cases it has been necessary to use the whey powder for as long as eight or nine weeks before the infant was able to assimilate any casein. This whey powder also permits the physician to make any desired modification with pure milk ingredients, and to vary the proportions of casein and albumen according to his desires, and has proved invaluable in the frequent cases of infantile casein dyspepsia where even a small quantity of casein forms an undigested curd.

As a result of the work done with these foods during the past fifteen months it is apparent that the practical results which the physician can obtain correspond closely to the theoretical results which the method of preparation of the foods would indicate.

THE TUBERCULOSIS EXHIBIT OF THE ONTARIO BOARD OF HEALTH.

By JOHN W. S. McCULLOUGH, M.D.

CHIEF HEALTH OFFICER OF ONTARIO.

This exhibit, inaugurated some three years ago, has been shown in a number of the larger centres of the Province, also in a tent at many of the fall fairs, as well as in Montreal, Quebec and Toledo, Ohio. It is an educational feature of the campaign against consumption.

Amongst other things the exhibit shows charts, maps, models of tents and sanatoria, photographs and colored pictures, a tent fully equipped for use, and demonstrations of the value of outdoor life in connection with the treatment of tuberculosis. Literature respecting the disease is distributed and lectures given upon the subject. Accompanying the exhibit is a first-class reflectroscope and upwards of 600 slides illustrating various phases of the cause, prevention and cure of tuberculosis.

During the winter of 1910-11 a new departure was made for the first time in Canada of showing this exhibit in a railway car upon the siding at railway stations. In this way a larger number of places was reached. A car, 60 feet long,

was rented from one of the railway companies and the exhibit placed therein. It was found by this plan that smaller places where, perhaps, suitable hall accommodation could not be secured, but where the interest in the exhibit was at least as great if not greater than in larger places, were reached. In most of these places talks upon the subject, illustrated in many cases by lantern views, were given by local medical men, clergymen and others, or by the writer. In several places Dr. G. D. Porter, Secretary of the Canadian Association for the Prevention of Tuberculosis, delivered interesting lectures. A considerable amount of interest was aroused and endorsement of this plan of education in the matter of tuberculosis has been received from the majority of places visited. In all, the exhibit was shown during the months of December, January and February in 57 places. It is the intention to continue this plan of procedure during next fall and winter, when we hope to have a first-class lecturer accompany the exhibit.

When the general public understand that tuberculosis is a communicable disease, that it is not dangerous to have consumptives about if proper precautions (which we try to teach), are observed, that drugs, especially patent medicines, are not the essentials of cure, they will have begun to appreciate the value of our educational campaign.

The death rate of tuberculosis has in the last few years materially decreased in the Province. In 1909 there were 2,511 deaths in an estimated population of 2,333,864, or 1 in every 13 deaths. (Total deaths, 32,636).

The exhibit will be shown in connection with the Public Health Exhibit at the Canadian National Exhibition to be held in the city of Toronto next autumn.

EVOLUTION OF LOCAL PUBLIC HEALH: COUNTY HEALTH ORGANIZATIONS.

By P. H. BRYCE, M.A., M.D.

As was stated in a pervious article* in which the evolution of the Local Health Board as it exists in Ontario to-day, was outlined, the smallness of the unit, with the exception of the several larger cities, has made it plain after nearly 30 years' experience that some change is absolutely essential to the development of aggressive scientific public health work in Canada. Naturally, experience brought the authorities in England to the same conclusion earlier, since as long ago as 1888, what is known as the Local Government Act was passed, which provided that each borough with a population of 50,000 or over, and every county with this population became as well as other specially isolated areas, *county units* for public health purposes. It is quite true that the smaller sanitary areas, even parishes, may still exist within these larger county units for public health purposes; but still the County Council and its permanent Medical Officer of Health dominates the situation. In addition to these public health duties this County Officer of Health may act as coroner, to be appointed by the County Council. Similarly any sanitary authority within a county may delegate its public health duties to this County Officer of Health.

So far indeed has this evolution gone on that in 243 county school areas the County Officer of Health has been made, in addition to his other duties, the Medical Officer under the Education Board in 223 of the total areas.

At first a number of the County Councils were slow to take advantage of their enlarged powers, and hence all did not at once appoint County Officers of Health with much more than nominal powers and salary; but to-day, in most of the county units, full-time Medical Officers of Health

*The Public Health Journal, March, 1911.

exist, and there are few more influential bodies to-day than the Medical Officers of Health represented in their Society, with several thousand members. The report of the Poor Law Commission, issued in 1909, approves of still further unifying County Public Health work by providing that the County Officer of Health may have medical and sanitary charge of the industrial schools and houses of industry.

Enough has, however, been said to indicate the evolution of public health in England, where the earliest and best work has been done with results upon the general health, judged by the mortality rate, which are the wonder and envy of every progressive country. It is then not to be wondered at that the writer, laboring to build up a working public health machine in Ontario, and constantly looking to England for inspiration, should early have recognized that the primary requisite for the progress of public health everywhere throughout Canada was the widening of the municipal unit to such an extent as to make possible the appointment of a well trained medical officer to preside over the health destinies of a county or riding, and so equipped not only with technical knowledge, but also with such adequate salary, as would enable him to become the guide, philosopher and friend (through his laboratory), of the practising physicians, of the veterinarians, of the school teachers, of the dairymen, farmers, and, indeed, of the whole community.

The need for evolving, out of the health machinery of 1884 for creating Local Boards of Health and their officers, a body of trained medical officers of health, from practising physicians, was encouraged through the organization in 1886, at the time of the meeting in Toronto of the great American Public Health Association, of the Association of Executive Officers of Health of Ontario This Association, amongst the first on the continent, maintained for many years an active existence, and its annual reports, printed by the Provincial Board of Health, form one of the most complete compends of discussions on municipal public health subjects extant in America.

Dr. J. M Shawe, of Keene, a village practitioner, in a paper at the meeting in 1903, gave some of "The Chief Reasons for a Change as soon as Possible from the Municipal Medical Health Officer to a County Health Officer." He said: "Having been for years a medical health officer of a township it is no wonder I have very strong views on this important matter. I will now touch on a few reasons why I have arrived at this conclusion, viz.: A doctor in active practice is often urged by his patients to say nothing about a case of infectious or contagious disease, so that they will not be quarantined" . . . "Once more, in case of a severe epidemic, it is almost impossible for a doctor to neglect his practice and give the necessary time to stamping out the disease; to say nothing of the great danger while being rushed with work of not taking proper time to disinfect clothing, and thus running a risk of spreading in place of checking the outbreak; besides, it cuts off a lot of practice, as some people are very much afraid of these diseases classed as contagious, and consequently they go to another doctor who is not attending one of these cases."

These extracts give in a simple manner the exact situation of some 600 medical health officers in Ontario, and presumably proportionate numbers in the other provinces, who to-day are paid from $5 to $50 per annum, and upon whom the country has really to depend, not only for the routine performance of public health work, but who must, if we are to progress, also become local apostles of health and initiate improvements to carry out the ever enlarging knowledge of science as applied to public health.

It need hardly be said that it is hopeless to expect progress under such conditions. Rather it is absurd to suppose that under the conditions outlined by Dr. Shawe, physicians or any other class or men in our wealthy communities are in a position to devote themselves to a propaganda, the results of which must be the seeming lessening of their own emoluments, and the bearing of other people's burdens to a point exceeding even that which Holy Writ calls upon men to assume. In a recent paper on "Social Efficiency in Local Public Administration," by Dr. A. Newsholme, Chief Medical Officer of the Local Government Board, it is stated that the salaries for the medical officer and sanitary inspector are about $150 in a small rural area of 2,000 population, while the amount per capita decreases steadily till in a county borough the cost of the officer of health is reduced by 50 per cent.

It is hence, perfectly evident that in a

work of the highest scientific and technical character, involving as it does the widest and most exact knowledge of the exact sciences, no real or permanent advance is possible without the enthusiastic devotion of a trained man to the work and to this must be added adequate laboratory facilities for the work to be done, and a permanent appointment, secure from political influences, and encouraged by such remuneration for services of supreme importance to the community and country as will create a body of medical officers of health, one for every county or large urban area, whose work will promote more than any other single agency, national welfare, communal prosperity and individual happiness.

How the special county health organization is to be worked out in Canada and what the wide work of a county health officer should be, will be outlined in a final paper.

THE PHYSICAL EDUCATION OF BRITISH CHILDREN.

By PHILIP SNOWDEN, M.P.

In 1907 the British Parliament passed an Act to create a department of medical inspection in connection with the National Education system. For some years previous to that time a few education authorities, notably Bradford and the London School Board, had done such work in a limited and experimental way, and the facts which had been ascertained by these bodies, and which had been put before Parliamentary Committees and the Congresses of various societies, showed that the health of a large number of the children attending our elementary schools was in a deplorable state. With the assent of all parties in the House of Commons, legislation was passed three years ago to give the Board of Education power to require every local education authority to appoint a school medical officer, who must make a medical examination of children immediately before, or at the time of, or as soon as possible after their admission to an elementary school. By a later order of the Board an examination was to be made of all the children then in the schools of the country.

A proper system of school medical inspection cannot be organized in a year, and up to the present the work of the officers has been mainly directed to the building-up of an efficient method of examination and tabulation, and of bringing the various voluntary societies which exist to provide medical relief into close touch with the school medical department. "The aim has been to devise the most simple and expeditious way of bringing the children through the process of medical examination into the hands of those qualified to treat them without unduly harassing the parent or weakening his responsibility." The idea in the minds of those who instituted this system of school medical examination was to ascertain the general physical condition of the school children and the state of individual children, so that the school curriculum could be adapted to their capabilities, and so that incipient disease might be detected and arrested. The idea was that the medical examination would enable the education authorities to make the physical development of the children as much a part of their work as the education of the mind.

The chief medical officer of the Board of Education reports that most of the provincial education authorities have begun to do their work in a thorough and systematic way, over one hundred of them having made examinations beyond the requirements of the code. The London County Council is given a very severe reprimand for its neglect to do the work imposed upon it by law. The report says: "I should be failing in my duty if I did not make it clear that the degree in which this authori-

ty have fallen short of accomplishing the work it was their duty to do is without parallel." The Council has appointed a large staff of school doctors, but they appear to have been employed in anything but the work they were required by statute to carry out. During last year there was no statutory medical examination at all in some 800 of the schools in the metropolitan area. It is a pity that the London education authority, which did good work in this respect when there was no legal compulsion to do it, should now be lagging behind the rest of the country. Since the end of last year, I believe, there has been an improvement in the medical examination work under the London County Council, and the report of the chief medical officer of that body, dealing with the health of the metropolis in 1909, shows that there is need for all that can be done to improve the health of the children of that great city.

It is too early yet to give exact and precise statistics as to the number of children who are suffering from disease or physical defects, but the report gives a general statement which shows to what an alarming extent the children in our day schools are suffering from ill-health and physical shortcomings. About 10 per cent. of the six million children attending the public elementary schools of England and Wales suffer from serious defect of vision, 3 to 5 per cent. suffer from defective sight, 1 to 3 per cent. have suppurating ears, 8 per cent. have enlarged tonsils so bad as to require surgical operation, 20 to 40 per cent. have extensive and injurious decay of the teeth, 40 per cent. have unclean heads, 1 per cent. suffer from consumption in an easily recognizable form, and a number suffer from heart disease. The chief medical officer remarks that: "It is to be feared that in the aggregate this formidable category of disease and defect means a large degree of suffering, incapacity, and inefficiency."

The medical examination of the children has revealed a very unsatisfactory state of things with regard to the cleanliness of the children. It will be seen from the figures given above that 40 per cent. of the children were found with unclean heads. In one western county 49.3 per cent. of the children had "nits." This is a state of things which need not exist, and one for which poverty is no excuse. It is satisfactory to note that there has been an improvement since the examinations first began. Some parents have resented the interference of the school authorities with the right of the parent to keep the child in a filthy condition. One child in a particularly objectionable state of uncleanliness was sent home by the teacher with a note to its mother asking her to clean the boy. She sent back the boy in the original state with a note saying: "I sends my Jimmey to school for you to teach, not to smell. He aint a rose." But the parents who have in the past been neglectful of the condition of their children are now being shamed into keeping them in a more cleanly condition; and as filth is so often the mother of disease, the local authorities ought to have drastic powers to compel parents to keep the bodies of their children free from dirt. Some local authorities have excluded children from school on account of their filthy condition, and this has often had a good effect on the parent.

It is little use being in possession of the facts as to the physical condition of the children unless there is some provision by which those suffering from disease or defects may be treated. One of the chief values of this inspection is that defects are found of which the parent was quite ignorant, and by immediate attention to the matter the disease may be arrested or cured. Unless something is done to "follow up" the examination, both it and the cost of it is wasted. The local authority should systematically keep a record of all cases of disease or defect, and at regular intervals ascertain from the parent what is being done to treat the child. In most cases the parent will be in a position to obtain the medical or surgical treatment needed, but where he is too poor the child on no account ought to be neglected. The local authority should come to the assistance of such cases, either by helping the parent to get assistance from some voluntary society which exists to relieve such cases or by directly assisting the case themselves. There is always an inclination to neglect attending to a disease or defect which is not felt to be immediately serious, and it is to be feared that in most cases of slight defect—such as deficient hearing, or defective vision, or bad teeth, the parent will ignore the report of the school doctor unless he is pressed repeatedly not to do so. The importance of having the children grow up as healthy as possible is as great as it is that they should grow up intelligent.

The parents have, on the whole, supported the local authority with quite remarkable sympathy. In some towns as many as 70 per cent. of the parents have attended the medical examination.

The local authorities cannot stop at examination and report. It is gratifying to know they are not doing so. Some districts have appointed school nurses, and these women are admirably fitted to act as a medium for carrying out the instructions of the school medical officer. The ailments from which the children suffer, such as filth diseases, can be best treated by the district nurses instructing the parent as a friend. The Children's Care Committees, which exist in some places, can take up the work of following up the report of the school doctor. In several districts these committees are at work. The school medical officer for the West Riding has issued a very valuable set of rules and regulations for the guidance of such committees who may wish to assist the education authority in providing medical or surgical attention for ailing children. The system of medical examination has not been in practice sufficiently long to enable full returns to be made as to the results in the way of attending to the reports given by the school doctor; but figures have been supplied by a number of authorities, and for a beginning they are quite satisfactory. The county of Glamorgan stands far away at the head in the percentage of children who have received treatment for defects and diseases pointed out by the school doctor. Those suffering from squint have all been treated, and 96 per cent. of the cases of deafness have been attended to. In some places the percentages of cases treated is not more than one-fifth.

The local authorities have really done extremely well on the whole in carrying out their duties in regard to the physical condition of the children. Over forty authorities have employed school nurses, and last year £1,650 were spent in this way. Other authorities have subsidized the district nurses, who have taken on the additional work of looking after the defective children. Last year, 37 authorities provided spectacles for children at a cost of about £500. The Board of Education has given power to a number of education authorities to make grants to the local hospitals, and in that way they are able to nominate children for admission to these institutions.

The most important development of all in connection with the medical branch of education is the school clinic. This is a medical centre under the control of the education authority for the treatment of children. It is useful also as a centre where more exhaustive examinations of the children may be made than is possible in the school. Such diseases as those of the skin, teeth, eyes, and ears can be most satisfactorily treated in this way. The special sanction of the Board of Education is needed to enable an education authority to set up a school clinic, and during 1909 eleven authorities sought and obtained such powers. The one established by the City of Bradford is the most complete one in existence in England. In 1909, 2,323 cases were treated in this institution.

A few years ago there were few people who would have approved of the education authority taking any account of the physical condition of the school children. The facts very briefly set out above show that a revolution is going on in the world of education. A former Minister of Education once said to me: "I have been working to get the doctor into the schools because I know that after him will follow all I want to see in the way of the public treatment of the diseased and deficient child." Three years ago it was only medical examination, now we have medical treatment. The latter was sure to follow the former. But we have not finished yet. The State has accepted a responsibility now for the physical condition of the children, which will compel it to add more duties to the present until provision is made by which every child will receive all the care and attention which science can provide, so that it will grow up with a strong, clean, and healthy body as well as an educated and developed mind.

HOW TO GET RID OF DISAGREEABLE SMOKE.

By CYRUS LOCHER.

With the beginning of the use of soft coal as a fuel, arose the problem of how to get rid of the disagreeable smoke. The question has grown more serious yearly in every growing city where bituminous coal is burned More than 1,500 patents have been granted by Canada and the United States to inventors of so-called "smoke consumers" and "smoke burners" and everywhere municipal governments have taken up seriously the abating of smoke.

Experience has demonstrated that objectionable smoke may be prevented, even though soft or bituminous coal be used exclusively as fuel. By careful firing, either by hand or a mechanical stoker or feeder, fresh coal can be evenly distributed over the hot furnace bed. This, with the aid of mechanical devices designed to perfect the draught and so cause a sufficient uniform degree of heat to reach all parts of the coal, avoids a "smothering" which produces a lower degree of heat favorable to the separation of the material which makes smoke from the body of the coal. Sometimes an entirely new furnace equipment is the only remedy.

In Chicago an estimate by the smoke inspector shows that smoke, besides being a nuisance, causes a loss to the citizens of $21,830,000 annually, or about $10 per capita. The laundries, clothing merchants, dyers, house renovators and painters and operators of vacuum cleaning machines are reaping a harvest. In St. Louis recently 6,000 pupils in one of the public schools had to be dismissed at 11 o'clock on one of the darkest days, while at other schools within the smoke belt the children were entertained with stories by their teacher during the time it was too dark to study.

In many cities special smoke abatement leagues, exist, because it is recognized that those who live in a smoke-laden atmosphere are especially liable to diseases of the respiratory system. Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, goes so far as to say that the dust and smoke problem underlies all deliberate efforts to improve the conditions which determine human life. Other things equal, the length of life will be in almost exact proportion to the degree and kind of dust and smoke exposure.

What is required to-day is effective public supervision, for all matters of this kind involve the question of community responsibility. The control of the smoke nuisance must needs have its effect on real estate values, which are now in many places depressed because of it.

Smoke abatement, which is simply complete combustion and utilization of all heat-producing parts of the coal, is economy to the consumer of fuel. In every case smoke is a preventable nuisance, and every smoking plant or locomotive is a sign of wastefulness and a disregard for the rights of the public. Creating dense smoke is a waste in itself, and its emission creates additional waste. Thus it follows that the interests of the private owner and the requirements for public health, comfort and convenience run in parallel lines. Proper laws for the regulation, prevention and abatement of "dense" smoke are, therefore, just to the consumer of fuel and highly desirable to the public

The source of governmental authority to abate the smoke nuisance is the police power of the state. This means the general right of the government to preserve and promote the public welfare by establishing such rules and regulations for the conduct of all persons and the management of all property as may be conducive to the comfort, safety and welfare of society.

The legislature frequently gives to the municipalities the power to declare what shall be deemed nuisances within city limits. Cities also have the power under the common law to cause the abatement of nuisances that are such in themselves without being specifically so declared. If the legislature gives the cities specific power to declare the emission of dense smoke within their limits to be a nuisance, it must

be exercised by ordinance and not committed to the discretion of municipal officers.

Some courts have held that the words "emission of dense black or gray smoke" are vague and uncertain, but these decisions are outweighed by the trend of later verdicts throughout the country. Everyone knows what is meant by "dense smoke." It is easily recognized by the sense of sight, and leaves its mark wherever it falls. Convictions may be obtained by the ordinary prosaic manner of asking witnesses of what they have seen. Juries and courts will not pretend to be more ignorant than the rest of mankind. The jury decides as a question of fact whether smoke coming from a chimney is dense.

Courts have taken judicial notice of the fact that the discharge of dense smoke into the atmosphere in a large city is of itself a nuisance to the general public. It is injurious to vegetation, to many kinds of goods and annoying to the people. The courts, therefore, confer upon municipal corporations ample power to prevent a nuisance which of recent years has greatly interfered with the health, comfort and convenience of citizens. In view of the advanced legislation and judicial decisions in recent years, we may well say that the law pertaining to the smoke nuisance is progressive and will keep pace with the popular sentiment regarding the emission of "dense" smoke into the air in large centres of population.

Editorial

Infant Mortality.

An infant mortality of something like 196 per thousand births in 1907, and of about 155 per thousand births in 1908, for the Province of Ontario, is something that needs immediate attention. In the first place, let us look to our figures, for there is nothing so misleading as statistics. Both these results are arrived at by taking into account all still-births as births, and also as deaths. We should have our infant mortality calculated independently of still-births altogether. Still-births should be recorded carefully and published, but published in a separate statement, and infant mortality should be calculated from the total number of births in the year (still-births not included) and the total number of deaths under one year of age during the year (still-births not included). The requisite information to enable us to do this is not given in the Report of the Registrar-General for 1907, nor in the Report for 1908. It should be.

Then we should also have a separate statement of the infant mortality of illegitimate children.

The next thing to do is to improve our registration percentage. Other civilized countries succeed in getting 90 per cent. of the births registered. Do we? No. This should be done at once. A prominent physician was heard to boast the other day that he attended at about 300 births per year and did not notify or register one of them. Surely we might do better than this. Probably the physician should be paid for this service. After all, it is not a medical function. We are not State officials—not yet. Some means ought to be found to get our births properly recorded.

The Humor of Sir Almroth.

Exception has been taken in some quarters to the second of the Lady Priestly memorial lectures of the British National Health Society, delivered recently by Sir Almroth Wright, M.D., F.R.S., on "Bacteriology and Health."

There was a widespread belief, he said, in part, that people could keep disease away by following the rules of individual hygiene. These rules were that they must eat a lot, have a certain amount of exercise, wash and have plenty of fresh air. He was persuaded they were quite wrong, particularly in regard to Turkish baths; and though he felt that such things might add to the pleasures of life, he did not think that cleanliness was to be recommended as a hygienic method.

Sir Almroth Wright is a distinguished member of the profession, having done valuable work in every branch of physiological and pathological research. It is to him that we owe our knowledge of the opsonic index.

We are inclined to think, therefore, that in his Lady Priestly Memorial lecture Sir Almroth has been joking with the laymen and perhaps having "a good tug (*a la* Osler) at the professional leg."

Inter Alia.

We are publishing in this issue, under Meetings and Reports, the constitution and by-laws of the Canadian Public Health Association

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Last month the Governor-General of Canada wrote a letter to the mayor of Ottawa urging an immediate warfare on house flies. He suggested that a systematic campaign should be inaugurated and called on the mayor to take the lead, believing that Ottawa, as the capital, should set an example to other cities in getting rid of the fly by removing conditions which attract it or encourage it to breed.

Earl Grey proposed the same old remedy, cleanliness, the natural enemy of disease at all times. It is not merely necessary to keep a house clean and well screened, but the premises as well. A filthy back yard can breed enough flies to bother thousands of people, and a person who screens his house and pays no atten-

tion to his back yard, is merely protecting himself, while breeding pestilence for his neighbors.

Many people are negligent and careless and permit pestilence breeding filth to accumulate. As a chain is only as strong as its weakest link, so a community is only as sanitary as its most unsanitary spot.

Health is largely a matter of habit whether of the individual or the community. Daily obedience to a few simple laws is the one great guarantee against epidemics as well as against ordinary diseases.

The most effective work that can be done towards reducing the death rate is to school the public in habits of everyday and universal sanitation. This, of course, requires not only the enactment but the strict enforcement of sanitary measures.

Dr. J. W. S. McCullough, chief health officer of Ontario; Dr. Charles A. Hodgetts, of the Conservation Commission; Allan Hazen, civil engineer, of New York; T. C. Keefer, civil engineer, of Ottawa, and Professor Shutt, of the Ottawa Experimental Farm, have been appointed a committee to examine the water supply and sewerage system of Ottawa and are instructed to "investigate the best sources of water supply and sewerage disposal for the city."

It is generally felt that reflections upon and investigations into water supply will hurt a community commercially. Is a municipality's reputation worth more than the health of its citizens? There is absolutely no reason why any town should not have a pure water supply. The supreme court of the State of Minnesota has recently ruled that a city is responsible for any injury or death resulting from water. If we had such a rule in parts of Canada, perhaps some of the sanitary officials in charge of water supplies would issue a warning when accidental contamination occurs.

Compulsory vaccination throughout the Province of Quebec has been decided upon by the Provincial Board of Health, as a result of sporadic outbreaks of smallpox reported of late. A decree has been promulgated instructing each of the 1,500 municipalities of Quebec to enforce general vaccination. Many municipalities already have such laws, but now it will be incumbent upon all the rest to pass such laws within five days after the order is received from the Provincial Board of Health. In most of the rural districts such orders are to be promulgated by announcements from the church doors after mass and within 48 hours from such announcement the law goes into effect, and any person who cannot show proof of proper vaccination within seven years, will have to submit to vaccination under the penalty of $5, with further penalties if they refuse to comply.

In relation to such matters, it has been decided to divide the Province of Quebec into ten districts, each under the supervision of an inspector, specially trained and examined for the post.

Compulsory vaccination will not apparently be enforced in the Toronto, Ontario, schools, although Dr. Struthers, Chief Medical Inspector, seems to favor it. The school management committee have recommended that the parents be asked to let their children be vaccinated and that medical inspectors be permitted to vaccinate those children whose parents or guardians have requested it.

In the report of this committee, the recommendation is also made that in order to protect school children from the danger of contagious disease, new scholars or those promoted to another class, be given a new set of books that shall become the property of the pupil; and that books ordered to be destroyed by the Medical Health Inspector on account of contagious disease shall be replaced by a new set supplied by the Board of Education.

It is also proposed to establish in Toronto a laboratory for the dental treatment of the poor children of the city. The urgent need of such work is shown by the fact that the recent investigation made by the medical inspector in public schools revealed that fully 99 per cent. of the children are in need of dental treatment.

Toronto's health officer, Dr. Charles J. C. O. Hastings, is advocating a number of admirable reforms in sanitary matters. Considering the common drinking cup, he writes: "Inasmuch as human saliva and

expectoration are the principal media through which the germs of such diseases as tuberculosis, diphtheria, typhoid fever, and other communicable diseases are spread, it must be apparent that the public drinking cup or glass is a frequent source of the spread of the aforesaid diseases. Its use is, consequently, prejudicial to public health, and it therefore becomes my duty, under the Public Health Act, to ask your board to see that the aforesaid public drinking cup or glass be removed from the schools under your jurisdiction, and sanitary fountains or sanitary drinking cups substituted therefor, at your earliest convenience."

As a substitute for the common drinking cup in schools, public buildings, parks and elsewhere where there is a municipal water supply, the bubbling fountain is most efficient. But where drinking cups are an immediate necessity, a new scheme to minimize the cost has been recently advocated. It consists of a roll of stiff manilla paper attached to the wall near the water cooler so that the thirsty may tear off a piece, make it into a cornucopia or anyone of the numerous forms of cups to hold water; the paper to be thrown away after drinking. Such rolls of paper would cost approximately $1 per roll, the paper used to be nine inches in width. By using a square piece a servicable cup could be made on the instant, which for all practical purposes would be as good as those cups sold for a cent or more each. Using the inner side of the paper a practically clean surface is secured, which is more sanitary as, on account of the paper being rolled up, dust and dirt cannot settle on its surface.

A by-law to protect food stuffs from contamination, submitted by a committee of the Toronto Board of Health, declares that all articles of food for sale are not to be conveyed from place to place or kept in an open window or doorway or outside a building unless covered with clean material; that every place where food is stored and sold should be kept in a wholesome condition; that all persons engaged in handling articles of food shall wear clean outer garments; that any room in which articles of food are kept or sold shall not be used for domestic purposes; that the use of newspapers or unclean paper for wrapping articles of food is prohibited; that every vendor of food stuffs shall keep in his waggon a water-tight covered receptacle for the wastes of his business.

There is one thing lacking in many of the cities and towns of Canada, and that is efficient restaurant inspection. Such inspection, where it is carried on, embraces a number of interesting features. A score card is used as a matter of record, and every restaurant proprietor is given full explanation of its uses. A system of points makes up the standing of a restaurant inspected, and a score is made up of proportionate points. The restaurant kitchen, ice-boxes, attendance, pantry or storeroom, methods of washing dishes, the dining-room and surroundings constitute the "curriculum" of this inspection, which makes for general cleanliness, absence of flies and other insects and wholesome service. Under this system a restaurant scoring 85 is regarded as high grade, while one below 50 is weak in sanitary measures.

The mainspring in such a system is the publicity given these monthly reports. No doubt in some places it would be difficult to put such a plan into effect because of political or other pressure brought to bear to prevent it, but such inspection of restaurants is necessary; a flood of light judiciously tempered and directed against vulnerable spots is marvelously effective. In these days of sanitation it is no less than a crime to tolerate dirty restaurants and unclean food and drink.

Expectoration is one of the chief ways of spreading consumption. Take this in connection with the fact that the vast majority of our towns have no street sprinkling nor oiled roads; and the people literally bit the dust—all sorts of filth combined in its make-up—and what is the natural result?

Let it be ended for keeps. There is no excuse for raising disease spreading clouds of dust. In cities when sprinklers are barred by the temperature, there should be no day sweeping unless of the pick-up kind.

Library and Laboratory

A Manual of Physical Diagnosis.

Dr. Brefney Ralph O'Reilly, of Toronto, has issued A Manual of Physical Diagnosis, which we believe deserves to be carefully read, not only by the beginner in medicine, but by the experienced practitioner. One difficulty that we are glad to see has been overcome in the treatment of this subject is the lack of discrimination, usually found in works of a similar character, between essentials and non-essentials. Dr. O'Reilly has also advanced a step in laying special stress upon the importance of inspection and upon the desirability of regarding the patient as a personality, rather than a mere abstract physiological or pathological problem.—*A Manual of Physical Diagnosis. By Brefney Ralph O'Reilly, M.D., C.M. (F.T.M.C. Toronto, M.R.C.S. England, L.R.C.P. London). Demonstrator in Clinical Medicine and Pathology, University of Toronto; Assistant Physician to St. Michael's Hospital, Toronto; Physician to Toronto Hospital for Incurables. With six plates and forty-nine illustrations. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St.*, 1911.

The Encyclopædia of Municipal and Sanitary Engineering.

For this work, it is claimed, with perfect justice, so far as we are aware, that it is the first of its kind. The literature of the subject is voluminous, municipal and sanitary engineers being remarkably prolific in authorship; but the innumerable papers, reports, articles, pamphlets and other treatises they have produced make, in the aggregate, a chaotic and altogether unwieldy mass, in which a vast amount of exceedingly valuable information lies almost hopelessly buried. To Mr. W. H. Maxwell and Mr. J. T. Brown has occurred the happy idea of digesting this mass of materials; and the result appears in a handsome volume of moderate cost, in which the whole subject, in its various phases, is dealt with in the only really practical way—that is, in the form of an encyclopædia, in which the alphabetical arrangement, while it necessarily involves a certain amount of repetition and over-lapping, is undoubtedly the most convenient method for reference. The editors, who have enlisted the co-operation of about forty contributors of unquestionable authority, have adopted the fair and wise course of affixing the initials of the authors to the more important articles—fair, because it is due to the respective writers to give them full credit for their work; wise, because the value of the information in any given instance can be more properly appreciated when one knows who is responsible for it—a point that is of special importance where systems or methods are sometimes in rivalry. The volume, so far as we have been able to test it, has been conceived and carried out in the right scientific spirit. For a one-volume encyclopædia, it is not over-bulky; and by the use of smaller type and smaller-scale diagrams, and by the more rigid condensation of the articles, some of which show a tendency to elaboration, as if the authors had not quite overcome the lecturer's habit of discursiveness, the book might easily have assumed still more modest proportions. In that case, however, it would inevitably have lost much of its present handsome appearance, to say nothing of its legibility; but as the subject continues to grow, such methods of compression as we have ventured to indicate will probably become necessary. We should have liked to see more attention given to what may be called the bibliography of the subject. Although many of the articles are, as we have said, unusually copious, one cannot reasonably look to an encyclopædia for absolutely exhaustive treatises under the various headings, but rather for concise summaries, with indications of the sources of other and fuller investigation. It may further be suggested that an analytical index would have been useful; for although the articles are, of course, in alphabetical order, it frequently occurs that one does not always know off-hand un-

der which heading to look for certain items to which the article-heading offers no precise clue—a deficiency that a good analytical index would supply. This difficulty, however, has been anticipated, and partly met, by the insertion, in bold type, at the head of some of the sections, of a sort of syllabus of the contents; which, however, does not answer the purpose of a good index. The volume, nevertheless, fulfils a distinct want, and the medical health officer will read it with profit.—*A Handy Working guide in all matters connected with Municipal and Sanitary Engineering and Administration. Edited by W. H. Maxwell, A.M.Inst.C.E., and J. T. Brown, M.R.San.Inst., London: Constable and Co., Ltd.* 562 *pages*, 8x10½. 42*s. net.*

Hospital Administrative Work.

A recent little publication of the Massachusetts General Hospital officials, Frederick A. Washburn, M.D., and Joseph B. Howland, M D., administrator and second in command, respectively, *Hospital Administrative Work*, gives attention to the need of educating men and women to take charge of hospitals. There is a constant large increase in the number of small institutions, which, while small, can by no means afford to be cared for by incompetent or inexperienced persons, and continual appeals are made to the larger institutions by the managers of the smaller ones for information on what are ordinary administrative subjects. "The realization that hospitals were suffering," writes Dr. Washburn, "while untrained superintendents were learning their business, led us to establish at the Massachusetts General Hospital a couple of years ago a course of training for these women." The policy of the management of this institution has been to furnish to the administrator a number of competent medical assistants. At first there was one, and the number has been increased till now there are four, each of whom is an understudy to the one above him, and the hospital need never suffer by the sickness or loss of any one of them. The economic policy has been followed to pay enough to get and retain the best men. A further advantage in the plan has been to relieve the administrator of detail, so that he may have the time to learn by study or inspection of the progress of other institutions. The assistants are thus assigned; the first is the executive of the main hospital, the second is in charge of the McLean hospital, the third is the head of the out-patient department and the fourth assistant is the admitting physician. These men are in close touch with the duties of their respective departments, they look closely after the condition of the patients on entrance and departure, one of them making a daily ward visit at the general hospital with a special eye to many matters like the danger list, the special nurses and the complaints of patients. Such men as the assistants are in training to become the heads of large institutions, and already one such assistant has been thus advanced.

At the Massachusetts General Hospital up to now only graduates of the training school of the institution have been taken in the special course for training in administrative work, and of these only those who have stated their intention of becoming hospital executives. But it has seemed best to widen the scope of the school somewhat and in the future it is to be open to the best equipped graduates from the Massachusetts General Hospital, or other nurse-training schools. It is a movement to fit keen and interested women who are mentally and physically active, for these responsible positions. Two students only will be taken at a time, this being the maximum established by experience. The work is observing, assisting and, finally, temporary charge of a room or a department. This includes such matters as the laundry, where the assistant is expected to take full supervision for a limited time; the inspection of the plumbing and steam piping; the use of ventilating or heating apparatus and such other items, even though not usually supposed to be in a course of nursing, but which are important when the nurse is the responsible manager. The administrative course includes work and experience in the admission office, the general office, both for records and accounts, the resident physician's office, the record library, accident ward, surgical building, the store, this being the commissary and supply departments, the apothecary shop, and the out-patient rooms. Then there will be observation in the housekeeping departments, the general kitchen, diet kitchens, serving room and laundry. Included also are instructions along the lines of the duties of the various attendants and nurses, maids and ward tenders, and a

knowledge of the details of the social service work which is coming to be so important an agent in the hands of skilled hospital authorities in the way of preventive medicine through the betterment of the homes of those applying for assistance. As a part of the course there are conferences on the subject of hotel administration.

In concluding their paper, Drs. Washburn and Howland note that seven nurses have thus far been graduated from this course, all of whom are occupying responsible positions save one, who by choice has deferred her entrance into regular work, and at the same time they outline what has been done in other institutions in different parts of the country. Dr. W. L. Babcock, Superintendent of the Grace Hospital, Detroit, has been giving a similar course for about the same time, two years, and although he has had more than two hundred applicants, has been able to care for only four for each six months. All of the graduates who have desired them, are now holding responsible positions. At Teacher's College, New York City, which has no hospital connected with it, an attempt has been made to supplement the excellent theoretical training by direct relations to a hospital by making arrangements whereby a few of the second year students may be admitted to residence at Bellevue and given practical opportunity to study the problems very closely. Similar advantages to these students have been afforded also at St. Luke's Hospital. The writers urge upon large hospitals the fact that it is their duty to undertake similar work. It means trouble and some annoyance, without doubt, but it increases the popular estimation of the people by the knowledge of a good work done for the community.

Public Slaughter Houses.

No better example, says *The Medical Officer*, can be found of the manner in which vested interests are permitted to hamper and impede public improvements, than that connected with the establishment of public slaughter houses. One of the essentials of a healthy existence is a proper food supply, and it has long been recognized that the manner in which such supply is produced and prepared, should be altogether above suspicion. The conditions under which animals are slaughtered for human consumption have been vastly improved in many districts during recent years, but a great deal still remains to be done before even a moderate ideal can be achieved. The first step towards reform is the abolition of many existing private slaughter houses in towns. Most of them were erected years ago; they are badly constructed, wrongly planned, and situated in unsuitable localities. Even the most stringent administration of by-laws fails to bring them up to present-day requirements.

Lessons in Army Sanitation.

The present mobilization of troops in Texas is giving the medical department of the army an opportunity to show the progress that has been made since the Spanish war in army sanitation and hygiene. A New York daily paper a short time ago inquired of the War Department what was being done to prevent a repetition of the experiences of the army in 1898, and a reply was received stating among other things that the medical department of the army was ready to supply, for inoculating the troops in the field, an anti-typhoid serum which had been previously tested by 20,000 inoculations in the regular army, and had proved its efficiency. The serum is now being supplied to all the soldiers in the camps at San Antonio and Galveston, which the War Department says is a feat of preventive medicine that for "magnitude and promptness of execution is unique in military history."

Among other measures, a carefully tested system for the disposal of waste has been put in operation which will prevent camp epidemics and nullify the dangerous activities of the common fly. Regarding the plans that have been adopted to safeguard the health of the troops the *Journal of the American Medical Association* says: "Sanitary squads of hospital corps men, under competent medical supervision, have been provided to secure cleanliness of the camps. Trained sanitary inspectors and field laboratories are now provided and the sanitary personnel, while somewhat short in numbers, is expected to be filled up in case of necessity from the medical reserve corps and the enlistment of hospital corps volunteers. The plans for temporary hospitals have been drawn and specifications are ready for the builder."

But an interesting fact is that behind the reorganized medical service of the army stands the Red Cross Society, with its enrolled trained nurses, hence "our boys in blue" will be well cared for in case of sickness. As illustrating the preparedness of the medical department for service, it is said that the hospital equipment and medical supplies left the depots in Washington and St. Louis while the troops were being entrained and arrived in San Antonio at practically the same time as the troops. Moreover, it is announced that ten times the military force sent to Texas could have been supplied and equipped with equal promptness.

Public Health Law and Railway Companies.

Is it right, *The Sanitary Record* asks, that companies should be permitted to be a "law unto themselves"? In other words, because a railway is a monopoly, should it be put outside ordinary methods of administration? Put in this way, it is difficult to reply direct. The provision made for the public service, the vast sums of money expended, and sometimes the small return received, seem to demand some special treatment; but how far should this be given? At the same time, we think these are matters upon which there should not be any doubt. The monopolist companies should be compelled to keep their premises clean; they should make proper provision for the accommodation of those who are to use their lines, and who bring "grist to the mill." The ordinary manufacturer has to make provision for the welfare of those who work oup his premises, and he has more than one class of inspector to pay attention to him. Let his place be dirty; let the sanitary provision fall short of the proper standard; let there be the semblance of inefficient protection against fire or for the safety of the workers, and at once he is subject to "orders," and if these are neglected, prosecution. The same principle should be applied to all public institutions and companies. The Inspector or officer of the Sanitary Authority must have the right to enter all stations and buildings to see that they are in proper working order, and it should be possible to serve notice on someone if there is anything wrong. It is on this point that we find a divergence of opinion. Some hold that monopolies and private Acts thwart the officers in what is claimed to be the legitimate performance of their duties. Hence the condition of the conveniences at some railway stations. The power of the company, the fact that often it is one of the largest ratepayers, and the doubt as to the powers possessed — all these factors prevent action being taken, and a nuisance is continued to the possible injury of the people. What is really wanted is a definite view of the whole matter. We could wish that some authority would have the courage to take up a test case if the right of inspection is refused to them. Failing that, perhaps the members of the "examining bodies" would give their views on the question, for it does appear to be a very real problem, judging from the queries which come to us from all parts of the country.

Examining for Cholera Carriers.

In the *New York Medical Journal* Dr. A. J. McLaughlin, of the Public Health and Marine Hospital Service of the United States, has recorded some important observations on cholera carriers which he made in Manila. He has never known a carrier to harbor the cholera bacillus for longer than 20 days, and he has found that the great majority lose the bacillus in less than 10 days. However, much longer periods have been recorded. The longest, observed by Pfeiffer, is 69 days. When cholera is epidemic bacillus carriers are numerous. Dr. McLaughlin found that from 6 to 7 per cent. of healthy persons living in infected neighborhoods in Manila were carriers. On the other hand, when cases are few, the so-called sporadic cases, hundreds and even thousands of stools may be examined before the first carrier is found. The fact that a carrier may harbor the cholera bacillus as long as 69 days explains how quarantine may be passed and an apparently inexplicable outbreak of cholera occur. The danger from the cholera carrier depends on his habits and on the sanitary conditions of the community. If he uses a modern flush-closet and keeps his hands clean he is harmless. But if there is no proper system of disposal of excreta and he deposits his stools where they are accessible to flies, or if he does not wash his hands after defæcation and handles food he is a source of danger. The

responsibility of carriers for outbreaks of cholera was proved by Dr. McLaughlin in Bilbid Prison. This prison is one of the best managed in the world; its food and water supply are under the most perfect control In the annual report for 1906 the occurrence of cholera in the prison was said to be inexplicable, as the drinking water was sterilized and food was under the most rigid inspection, and any food likely to convey cholera was always cooked. Every incoming prisoner was quarantined for five days. Each year, however, when cholera occurred in Manila and the surrounding provinces, outbreaks were observed in the prison. It seemed to Dr. McLaughlin that the explanation could only be that the disease was introduced by bacillus carriers. The stools of the prisoners concerned in the handling of food and water were examined, as it was not possible to examine the stools of the whole 3,000 prisoners. The stools of 17 out of 264 prisoners were found to contain cholera bacilli. Following an order to compel thorough disinfection of the hands upon leaving the latrine and before eating, the outbreak was quickly suppressed. To prevent recurrence the latrines were screened and disinfected, and the stools of incoming prisoners were examined. In spite of the presence of cholera in the surrounding provinces the disease did not reappear in the prison.

Over-growing Diphtheria Bacilli.

Henry Page, M.D., in writing in the *Archives of Internal Medicine*, notes a trial of the over-riding of the bacillus of diphtheria by a non-virulent one, literally a reversal of the process of sowing tares among wheat for in this instance it is the weeds that are choked and which die. While the principle may not be new in bacteriology, the use in individuals in this direct way has novel features and there is considerable difference in opinion even in face of these statements of the advisability of the use of staphylococcus pyogenes aureus in this way. Dr. Page himself gives a few pretty direct suggestions, one of which is that after a diphtheria outbreak search should be made for carriers, human and animal, of which the human is more dangerous, and in doing this a distinction should be made between virulent and non-virulent carriers. The treatment of carriers, he says, has heretofore been useless, local measures seem to fail and antitoxin seems to have no effect on their bacilli. Pure cultures of staphylococcus pyogenes aureus sprayed in the throats of seven known cases has destroyed the bacilli of diphtheria. The treatment, according to Dr. Page, is harmless, and should be used in all cases of carriers.

Sewer Air Analysis.

The popular fear of sewer gas is based not so much upon its direct poisonous action as upon its possible relation to communicable disease. For generations, says the *Bulletin* of the Columbus (O.) Board of Health, the belief has prevailed that typhoid fever, scarlet fever, diphtheria, etc., were induced by inhalations of sewer air from leaky plumbing fixtures. Since the day of bacteriology, doubt was cast upon this theory of disease communication. Now it is known that these diseases are due to specific germs. Every case of transmissible disease is due to some prior case. It is difficult in many cases to trace the infection to its origin through certain contact or media. A very important question is: Does sewer gas, as it escapes from defective plumbing systems or from the city sewer, act as a medium to transmit infectious germs to be taken into the human system by inhalation?

This question has been the subject of much research work on the part of scientists. A valuable contribution to the knowledge of this subject is dueto the investigations of the Sanitary Committee of the National Association of Master Plumbers. Under its direction Professor C. E. A. Winsloy, of the Boston Institute of Technology, conducted a series of laboratory investigations. Investigations were begun in 1907, and a final report was made two years later.

Only a few conclusions can be given. The professor says: "In the whole series of 200 litres of air collected from the most diverse locations on 19 different plumbing systems, not a single sewage organism was found except where the air was exposed to immediate local infection by fine particles of spray."

"Actual examinations of the air in sewers, however, by Miquel, in France; Petri in Germany, and Carnelly and Haldane, Robertson and Laws and Andrews

in England, showed that sewer air, as a matter of fact, contains very small numbers of bacteria, and those of types common in street air rather than in sewage."

"In general, my results confirm the results of Horrocks' in so far as they show that specific bacteria may be ejected from liquids into the air above. My tests of house drain air, like those of Carnelly and Haldane, and Laws and Andrews, on sewer air, indicate that mechanical splashing may produce a local infection of the air in immediate contact with the spray. Such an infection does not, however, extend for any distance, or persist for more than a minute or so. I found the general air of house-drainage systems singularly free from bacterial life. Out of 200 litres examined, only 48 contained any organisms capable of development at 37 degs. Sewage bacteria were found in the air of the house drains only four times out of 200 litres and then in the presence of mechanical spraying of sewage at the point of collection. The general air of the house-drainage system, aside from this local infection, was, as far as examined, free from sewage organisms."

All investigators testify that under certain conditions, as splashing of liquids and bursting of bubbles, sewage bacteria in small number are allowed to escape into sewer air. It is also admitted that the liberation of bacteria from dried sewage adherent to the surface of pipes, by means of air currents, is to be considered. In the light of scientific research, under ordinary conditions, there is little or no danger from sewer gas as a vehicle to transmit typhoid or other pathogenic germs. Sewer air, like other foul and impure gases, for physiological reasons, is to be avoided as detrimental to health.

The Estimation of Ventilation Quantity and Quality for Children's Health.

Lassabliere and Schatzmann, *Ann. de med. et chir.*, have made investigations on the effect which the aspect and ventilation of dwelling rooms have upon children's health. They inspected fifteen dwellings occupied by workmen, factory hands, etc., and considered the aspect, the total air capacity of the house and of the children's bedrooms, as well as the methods of ventilating and heating the whole. They also obtained samples of air from the children's rooms in the early morning, and estimated the amount of oxygen and carbonic acid gas present in them. The children were also examined with regard to their previous illnesses, and an examination of their blood was made. They conclude that the number of illnesses among children is greater as the amount of cubic air space is lessened; thus in a family where the children had been ill fourteen times the air capacity was one-third of that in other houses where the children were healthy. In such dwellings the blood counts showed a considerable amount of anaemia. In bedrooms anything less than 24 cubic feet per child is insufficient, and renders the family susceptible to infectious disease and anaemia. A north or southeast aspect appears to be unfavorable. In some cases the open window at night appears to have sufficiently supplemented the want of air space. The rise in carbonic acid was not probable that long-continued exposure to a vitiated atmosphere will interfere with the axydation of the child and promote malnutrition.

Open Mail

To the Editor of Public Health Journal nal:

The "Simplicity" of Modern Medicines.

Sir:—Nowadays everything tends to simplicity in medical and surgical practice. After centuries of elaborate stage settings and pretence the doctor nowadays goes to the other extreme, takes the patient into his confidence as much as possible, and uses the homeliest ends he can in attaining his object.

In a recent number of the *Hospital* two very good examples are given, showing how modern research is tending to simplify methods and inconvenience the patient as little as possible.

The first is a substitute for the usual very painful method of skin grafting. A distinguished Parisian professor, Dr. Paul Carnot, has recently discovered that hair has other uses than simply as an ornate covering for the skull; that, in fact, normal healthy skin can be raised from hair seed under suitable conditions.

His method is based on the principle that the tiny cells which make up the hair and their coverings originate from the same tissues which form the skin.

From this Professor Carnot argued that hair tissue might be transformed into skin cells if "planted" on a more suitable soil.

The process, which is simplicity itself, compares favorably in every way with the older accepted practices of skin grafting. First, a few hairs are plucked from the patient's own head. If he happens to be perfectly bald, the hairs can be taken from the head of a near relative. The author states in an article published in a recent number of *Paris Medicale* that the hairs show a readier tendency to develop into new skin when derived from a near blood relation of the patient than when coming from an outside source.

After the hairs are removed, the bulbous swollen end which was attached to the scalp is then cut up very fine with sharp scissors, and the resulting fine hair-dust is sprinkled over the part where the new skin is to be grown.

The whole wound is then covered with a surgically clean dressing and bandaged. No strong antiseptics are used. In about a week a series of white spots appear at the place of grafting, which gradually enlarge and form a new skin.

The new method has been given an extensive trial by its inventor in his hospital practice, and by its use he claims he has brought about a speedy cure in very severe cases of loss of skin from burns, varicose ulcers, and other conditions in which extensive areas have been denuded of the natural skin.

If the method gives the success in other hands which the inventor has experienced, the old, very painful, and not always highly successful method of stripping off portions of live skin and transplanting them on the denuded surface will soon be added to the rapidly-growing list of "relics of surgical barbarism."

Another "simple" method of treatment which is novel, and which, if it stands the test of time will fill a long-felt want in surgical practice, is the ethly-chloride spray treatment of warts. The whole apparatus needed is one of the small glass phials of ethyl chloride, with a spray stopper, which any chemist can supply.

Treatment consists of spraying the wart with the drug for a minute at a time, until the upper layer is frozen and painless. This method, of course, has long been used for producing local anæsthesia for minor operations, such as opening boils or abscesses. The freezing-process must be done every second day until the upper surface of the wart drops off, and the remainder shrivels up, leaving only a red spot.

Small warts come away in this manner after a few days' treatment. For deeper ones, the best results are obtained by slicing off the dried upper portion with a sharp, clean razor, and then spraying the ethyl-chloride on the remaining deeper part. The treatment is so simple, harmless and inexpensive, says *The Hospital*, that if it fulfils all that is claimed for it a very useful weapon will be added to the general practitioner's armament.

A. D.

West Toronto Water Situation.

Is it not possible that in attributing the recent outbreak of typhoid in West Toronto to the defective water supply we are straining at a gnat and swallowing a camel"?

Dr. Hastings has well said that the present water supply is much safer than the milk supply, and gives the bacterial count of samples of milk taken in the city showing the presence of 26,759,000 bacteria to the cu. cm., as against 19,000 per cu. cm. —the highest count made on the untreated lagoon water. But the comparison might be carried still further. An expert bacteriologist has racently made bacterial counts of nine samples of fresh meats purchased on the public markets, which show an average of 323,662,000 bacteria per gram. (the equivalent of the cu. cm. in weight). Two of the samples were then cooked, one "rare" and the other "well done," and counts were again made, amounting in the former to 168,000,000, and in the latter to 23,500,000 per gram. Furthermore, the great majority of these bacteria were found to be colon bacilli and other putrefactive organisms which had permeated the flesh of the animal during the "ripening" process to which "prime" beef is subjected.

The bacillus coli communus is not the infectious agent in the production of typhoid fever, as the current newspaper articles would lead us to believe; but it is frequently associated with the bacillus typhosis, which is the offending microorganism, and is for this reason a clue to sewage contamination. A predisposition to the disease is also fortunately essential to the development of typhoid — otherwise we would all get it—and there is perhaps no more potent factor in this respect than the lowering of the local resistance of the intestinal mucous membrane owing to the absorption of toxines produced by the putrefaction in the bowel of undigested remnants of abluminous food such as meats, etc., etc.; a condition known technically as autointoxication. It is also a fact that the bacteriologist can find no better culture media for the experimental growth of the typhoid bacillus than beef bouillion and milk, while on the contrary it is a well recognized fact that the juices of fresh fruits, such as the lemon, orange, grape and lime fruit are decidedly germicidal.

That a pure water supply is most urgently needed none will deny, but would it not be more radical to urge with greater enthusiasm more rigid regulation of the meat and milk supply? Would it not also be wise for the individual who wishes to avoid typhoid to so regulate his alimentary habits as to make conditions in the intestine unfavorable to the growth of this infectious organism? According to Prof. Metchnikoff, of the Pasteur Institute, this may be accomplished by decreasing the consumption of flesh foods, and making more liberal use of fresh fruits, cereals, and curded milk preparations, such as cottage cheese, yoghourt, kephyr, koumiss and buttermilk, all of which are unfavorable to the growth of putrefactive organisms. Incidentally the Government's reciprocal trade agreement should greatly facilitate a dietetic reform of this nature.

In regard to the increased proportion of typhoid in West Toronto, is it not reasonable to presume that there may be other contributing factors besides the much condemned Humber Bay water? Might it not be possible that the present unhappy situation is to some degree due to the absence of proper sewage disposal in this newly-annexed district, associated with the advent of spring weather, together with the ever-present atmospheric pollution by the noxious emanations from the region of the stock yards?

These are questions which in the opinion of the writer should warrant the candid consideration of our sanitary officials and medical men generally.

W. J. McCormick, M.D.

Cleaning Railway Cars.

Sir:— I should like to protest against one of the customs on some of our railroads. This custom is objectionable, and dangerous. When you ride in a railway car for any ordinary distance, a porter comes along with a broom and a dusting brush. He vigorously sweeps the aisle and between most of the seats. This raises a dust that is ill-smelling, stifling and dangerous. Before it has settled, he sets the dusting brush in rotation. What filth missed you on the first assault covers you on this one. I don't know of any custom so practiced as a rule that is more offensive. To have a coach

swept and dusted in your face is, it seems to me, never necessary. But the question of good manners is secondary. The first point is that this practice is an injury to every passenger. The point needs no further comment. And not only is this a common practice in regular coaches, but it is also practiced in the Pullmans. Every day you may there see a porter, not only sweep the coach, but also sweep the dust from some gentleman right into the face of some lady, and vice versa. Public sentiment, the rules of the railroad, and, if necessary, the law should stop this offensive and dangerous custom.

W. L. W.

Why Landlords Grumble.

Sir:—The reason why so many people move every year is not always the raising of the rent, because rent is not raised every year. A stronger reason is that many people consider it cheaper to move than to live in the same flat another year and clean up their own dirt. A new flat or a new building is what a tenant wants. Many people are always cleaning up their parlors, never thinking of the bedrooms nor bathroom nor kitchen, although these are the rooms that should be most carefully cleaned. Think of some of the places physicians and nurses are obliged to go into — no ventilation, dirty bathrooms, dirty closets, dirty faucets. This isn't the landlord's dirt. If the landlord were to remark about the tenants' dirt the tenant would tell the owner to mind his own business.

I might mention one more thing which is very important—the driving of nails in the wood work and into painted and calcimined walls. which renders rooms unfit for the next tenant.

Do you blame the landlord for grumbling? Cleanliness is next to godliness.

J. R. H.

Meetings and Reports

DOMESTIC

The Canadian Association for the Prevention of Tuberculosis.

The eleventh annual meeting of the Canadian Association for the Prevention of Tuberculosis will be held in Hygienic Institute, London, Ontario, on Wednesday and Thursday, May 17th and 18th, 1911. The evening meetings will be held in the Y. M. C. A. auditorium. Arrangements have been made with railway companies for reduced rates to delegates. The following is the programme, as announced by the secretary, Dr. George D. Porter, 455 Huron St., Toronto:

Wednesday, May 17th.—Hygienic Institute—10 a.m. Reports from Secretary and Treasurer; Reports from Affiliated Societies.; appointment of special committees. 2 p.m. President's address, J. Geo. Adami, M.D., F.R.S.; "Sanatorium Treatment," Dr. C. D. Parfitt; "Prevention and Treatment of Tuberculosis in Rural Municipalities," Dr. Wm. C. White, Pittsburgh. 8 p.m. Y. M. C. A. Auditorium. Addresses of welcome, Mayor Beattie and Hon. Adam Beck; Address: "The Present Outlook in the Campaign Against Tuberculosis," Dr. Livingston Farrand, Secretary U. S. National Association, New York; "Women's Work Against Tuberculosis," Mrs. P. D. Crerar, Hamilton.

Thursday, May 18. — Hygienic Institute — 10 a.m. "Tuberculosis Among Children, Dr. J. H. Holbrook; "The Tuberculosis Clinic," Dr. Harold Parsons; "Municipal Sanatoria," Dr. J. W. McCullough, Chief Health Officer of Ontario; General Discussion, led by Dr. J. H. Elliott; Report of Nominating Committee, Election of Officers and other business. 1 p.m., Luncheon to Delegates. 2.30 p.m. Reception at the Queen Alexandra Sanatorium (special cars leave the city for Springbank at 2 p.m.). 8 p.m.—Y.M.C.A. Auditorium—Address: "Relation of Bovine Tuberculosis to Public Health," Dr. E. C. Schroeder, of the Bureau of Animal Industry, Washington, D.C.

Canadian Medical Association.

The Canadian Medical Association will hold its next (forty-fifth) annual meeting in Montreal, on the 7th, 8th and 9th of June. A large gathering is anticipated and some excellent papers will be read. The committee on Public Health have arranged to make their department a special feature of the meeting.

The meeting will follow the convention and reunion of McGill graduates in Montreal, when the new medical buildings of the University are to be formally opened.

Dr. Edward Archibald, 160 Metcalfe Street, Montreal, is the general secretary.

The *Canadian Medical Association Journal* states: "The programme promises to be attractive. Sir James Barr, of Liverpool, one of the ablest and best known of the physicians of the north of England, is coming to deliver the address in medicine. The address in surgery will be delivered by Dr. Primrose, of Toronto. Dr. W. J. Mayo, of Rochester, will be present, and will read a paper on "Gall Stone Disease," with a view to urging early operation. No surgeons in America have had such a large experience in gall stone surgery as the Mayos. They are entitled to speak with authority, and Dr. Mayo will certainly present his views in a clear and attractive form. A number of interesting papers have been promised for different sections. Dr. Casey A. Wood, of Chicago, will read a paper before the ophthalmological section. An opportunity will be afforded the members to visit Macdonald College, which is one of the newest, largest, and most completely equipped of the agricultural colleges of the world."

Winnipeg's Health Report.

Medical Health Officer, A. J. Douglas, M.D., of Winnipeg, has issued his annual

The Editor trusts that all medical officers of health and school medical officers, will remember to forward copies of their annual reports to this office, 43 Victoria St., Toronto, Ontario, as soon as published

report for the year 1910. It is an exhaustive document and is being distributed to the extent of some 500 copies. The report covers every field of work under the supervision of the city health department, includes useful comparisons of statistics and a general resume of conditions by Dr. Douglas.

Dr. Douglas discusses the vital statistics; treats of infectious diseases under their separate heads, noting striking features during the year; discusses the proposed isolation hospital, medical inspection of school children, disinfection, milk and food inspection, medical relief, ventilation, plumbing, etc.; and in winding up pays a tribute to the members of his staff for their excellent work during the year.

Features of the report which should be noted by other city health officers, are "spot" maps of the city, showing the cases of scarlet fever during the year, similar maps of the province showing the location of all shippers of milk into Winnipeg, and a series of charts showing the seasonal prevalence of various diseases.

Ontario Educational Association.

Dr. George A. Auden, chief medical health superintendent for the schools of Birmingham, England, does not believe in separating the health departments of the city and the schools. Dr. Auden visited Toronto at the request of the Ontario Minister of Education to attend the annual conference of the Ontario Education Association. He believes in the necessity for considering the influences on a child's life from birth, and even before, and would make the city responsible for the health of the incoming population. Birmingham has nearly 100,000 school children, and a progressive system of medical inspection.

"The school stands between the home and the State, and it is through the school that the efforts and energies of the public health administration can be best directed to reach the homes of the people," said Dr. Auden, addressing a general meeting of the Association at the April convention on medical inspection in the schools.

"The introduction of this medical inspection," he continued, "was due to the increased recognition of the close vital connection existing between the physical condition of the normal child and the whole process of education. Medical inspection was based on the two assumptions that it was a State duty to safeguard society by preventing and suppressing infectious and contagious diseases, and that it was society's duty to initiate constructive schemes for the amelioration of the condition of successive generations."

During the meeting, in the course of his presidential address before the trustee section, Dr. White, of Lindsay, said that "The schools are not the aid to public morals that they should be.

"Immorality," he continued, "is more prevalent in the schools and consequently out of the schools, than it ought to be, and the time for education in this regard is not fully taken advantage of. The school, too, is not the aid to public health that it should be. The teachers either do not know enough about these matters or they do not impart such knowledge as they possess to the young mind, when it is most likely to receive and assimilate it."

Dr. White was of the opinion that the scarcity of male teachers in the public schools was attributable not only to the insufficiency of salaries paid, but also to the fact that the school work lacked in breadth and interest to such a degree as to render the monotony almost unendurable.

The Health of the City of Hamilton.

The most complete annual report ever issued by the Hamilton Board of Health is the one published for the year ending October 31st, 1910. It has been issued in pamphlet form and Dr. James Roberts, the Medical Officer, has therein presented a valuable array of statistics and other information, covering the work of the department. The pamphlet starts off with the quotation, "Prevention is better than cure"; includes with a presentation of the vital statistics for the year, pictures portraying some of the shacks closed by order of the Board of Health, photo reproductions, illustrating the smoke nuisance, and cuts of sanitary and unsanitary cowhouses. The vital statistics have been particularly well tabulated, and the work of the various inspectors is set forth in detail; the last page being devoted to "Healthgrams" which might with profit be familiarized by the public.

Among the diseases discussed is poliomyelitis, which began in Hamilton last July

and continued through August and September, and was probably the first extensive and virulent outbreak of the disease in this country; similar in course and sequelæ to the numerous epidemics which have been recorded and described by epidemiologists in northern Europe and in the eastern and western United States.

In regard to medical inspection of schools, the report states that this work in Hamilton is producing good results and that a determined effort will be made this year to establish a school dental infirmary.

The section dealing with Dr. Shane's department, foods and drink, says in part: "There are a number of small stores where candy is manufactured in basements, also in living-rooms. Candy should be made in rooms exclusively for the purpose and needless to say, the walls, ceilings and floors, furniture and utensils should be scrupulously clean." This section also recommends that street pedlars of ice-cream should be licensed.

The report is creditable to Dr. Roberts and his colleagues, and should go far towards enlightening those in Hamilton who require enlightening regarding the importance of sanitation and preventive medicine.

Constitution and By-laws of the Canadian Public Health Association.

CONSTITUTION.

ARTICLE 1.—GENERAL ORGANIZATION.

Sec. 1. This Association shall be called the "Canadian Public Health Association."

Sec. 2. It shall consist of the General Association for the conduct of the business and the promotion of the general objects and policies of the Association; and of sections when sanctioned by the General Association devoted to special departments of public health.

Sec. 3. The administration of the General Association shall devolve upon the officers and the Executive Council.

Sec. 4. The administration of each section shall devolve upon both active and associate members, and upon special committees of the same.

ARTICLE 2.—OBJECTS.

Sec. 1. The object of the Canadian Public Health Association is the development and diffusion of the knowledge of state prophylaxis in all its branches.

ARTICLE 3.—MEMBERSHIP.

Sec. 1. Members of this Association may be either active or associate.

Sec. 2. Delegate membership may be accorded associate membership on the presentation of written credentials from any organization entitled to send delegates to the annual convention, but such membership shall terminate with the convention at which the credentials are presented.

Sec. 3. Honorary membership may be awarded only to persons, wherever resident, who have rendered distinguished service to the objects for which the Association stands.

Sec. 4. Active membership gives the right to hold office. It may be accorded only to those who have been, for a period of at least one year, practically engaged in technical branches of public hygiene, or have been for a period of one year on the executive or technical staffs of federal, provincial, or municipal departments dealing with public health.

Sec. 5. Associate membership gives the right to vote on all questions, but not to hold office. It may be accorded to any one not eligible for active membership.

Sec. 6. All members, both active and associate, shall receive the transactions and official Journal of the Association.

ARTICLE 4.—OFFICERS AND THEIR DUTIES.

Sec. 1. The officers of the General Association shall be a President; First, Second and Third Vice-Presidents, a General Secretary, and a Treasurer.

Sec. 2. The duties of the President shall be to preside over all meetings of the Association Executive Council and Executive Committee. His term of office shall begin with the adjournment of the annual convention at which he is elected, but he shall become a member of the Executive Council and Executive Committee immediately on election. He, together with the Secretary, shall certify all administrative acts, votes, resolutions, or other transactions, including the minutes of the General Association, Executive Council and Executive Committee. He shall conduct all the public meetings of the Association in accordance with strict parliamentary usage. He shall give an address at the annual convention on some subject related to public health.

Sec. 3. The Vice-Presidents shall take the place and functions of the President on his request or in his absence, in the order of standing.

Sec. 4. The Secretary shall have charge of all correspondence and records, except those relating to finance, and of all printed publications of the General Association. He shall keep the minutes of the General Association, Executive Council and Executive Committee. Together with the President, he shall certify all acts, resolutions, orders, votes, and the minutes of the General Association, Executive Council and Executive Committee. He shall notify all members of the General Association of the Association meetings; all members of the Executive Council or Committee of all Executive Council or Committee meetings; and all members of all other committees of the General Association, of all acts, orders, resolutions, votes, or other transactions of the General Association, affecting their membership or duties. He shall have custody of all papers; after their presentation to the Association. He shall be chairman of the Publication Committee. He may select to act during annual meetings, an assistant, to be approved by the Executive Committee, but he shall be fully responsible for all things deputed to said assistant. The Secretary shall receive an honorarium annually, during his term of office.

Sec. 5. The Treasurer shall collect and keep on deposit the funds and securities of the Association, and shall give bond at the expense of the

Association, in a sum satisfactory to the Executive Committee, for the faithful performance of his duties. He shall pay such bills against the Association as have been authorized by the Council, and certified by it and by the person, or persons, to whom the expenditure was intrusted.

He shall keep a full, correct and clear record of all the financial transactions of the General Association and render the same annually to the Council for audit. He shal at any time, on the request of the President, furnish to the Executive Committee, a full, correct and clear statement of assets and liabilities to date, of cash on hand, and of outstanding appropriations against the same, and an estimate of income and expenditures for the coming year, together with any other information coming within his jurisdiction. He shall keep continually up to date a full, classified list of all members of the Association, showing the date of election, and last date of payment of fees. He shall collect all fees, and thereafter enrol those who have paid, in a properly classified list, open to inspection by all members, and shall distribute to those properly enrolled the badge which may be provided. He shall act as chairman of the Membership Committee, and as such shall receive and have charge of all applications for membership and of credentials of delegates, and shall carry out all the by-laws relating to the same. He shall keep on hand and issue on request a form of application drawn in accordance with the provisions of the constitution and by-laws. The Treasurer shall receive an honorarium annually, during his term of office, at the direction of the Executive Council.

ARTICLE 5.—ORGANIZATION.

Sec. 1. The President and Vice-Presidents shall serve from the end of one annual convention to the end of the next, and shall not be eligible for consecutive re-election.

The General Secretary and Treasurer shall be elected by ballot of the Association for three years.

If an office be vacated between election periods, the Council shall fill the vacancy pending the next annual convention, when the Association shall fill the vacancy for the unexpired term.

Sec. 5. The Executive Committee shall have all the officers and ex-presidents of the General Association, of the chairman of each section, and of not less than two members from each province.

Sec. 3. The duties of the Council shall be to consider all resolutions presented in writing to the Association and to report to the Association promptly recommendations concerning the same—to appoint, in accordance with the constitution and by-laws, the Executive Committee, together with such other administrative committees as may be necessary, and to receive reports of these committees; to consider and recommend to the Association general policies; to receive from the Association or the sections petitions or recommendations, and to report promptly on the same. A quorum shall be five.

Sec. 4. The Executive Committee shall consist of the President, the General Secretary and Treasurer of the Association and three members of and appointed by the Council. The President shall be the Chairman.

Sec. 5. The Executive Committee shal lhave all the powers and functions of the Executive Council between convention periods and shall represent the Association as seems to it best during that time. It shall be the auditing committee of the Treasurer's accounts. It shall authorize appropriations for usual current expenses and recommend to the Executive Council all other appropriations; but no appropriation shall be made or recommended except when cash assets exceed cash liabilities.

It shall decide what organizations may send delegates to the annual convention. It shall keep written records of all its actions and report the same to the Executive Council at the first subsequent meeting of the latter. No member of it shall serve more than three years, consecutively.

Sec. 6. The Treasurer shall be the chairman of the Committee on Membership, and the General Secretary the chairman of the Committee on Publication.

Sec. 7. The fiscal year shall be from the beginning of one annual convention to the beginning of the next annual convention.

Sec. 8. Amendments to the constitution may only be made by the presenting of the proposed amendment in writing at one annual convention, its publication and distribution to the whole membership and its adoption by a two-thirds vote of the members present in any regular session at the next annual convention, provided that notice shall be given of such proposed vote at least twelve hours previous to its being taken.

BY-LAWS.

Chap. 1. The annual convention of the Association shall be held in the place decided upon by the Association at its last preceding convention, and at the time fixed by the Executive Council.

Its officers shall be those elected at the last preceding convention, and its programme that one prepared according to the constitution and by-laws, provided also that due notice of this convention be given to each member of the Association at least one month previously.

The duration of the annual convention shall not exceed five days, and upon four of these only shall be held meetings for the presentation of papers and reports to the sections or the General Association. Meetings of the sections shall not conflict with meetings of the General Association.

COMMITTEES.

Chap. 2. Committees may be established by the General Association for the consideration of subjects relating to the principles and maintenance of public health. Such committees shall be limited to five members appointed by the Executive Council, unless otherwise ordered, and shall report not later than the next annual convention of the Association at which their functions shall terminate unless renewed by the Association. Committees may at their discretion add to themselves advisory members, not necessarily members of the Association. The chairman of any committee shall receive signed questions in writing on the subject matter of his committee from any member of the Association, and shall report the question and an answer to the Association not later than its next regular convention. If such question be received during the progress of an annual convention, it shall be answered, in so far as may be possible, at the next regular session of the same convention.

SECTIONS.

Chap. 3. By the consent of the General Association, not less than ten members of the General Association may form a section of the Association to deal with the work of any department of public health. Such sections shall be composed wholly of members of the Association; termination of membership in the Association shall terminate membership in the section, but the classification of members in the Association need not control their classification in the sections.

The sections may establish such constitutions and rules for the control of their membership and the conduct of their business as shall be approved by the Executive Council.

PAPERS.

Chap. 4. The Programme Committee shall use due diligence to secure papers and discussions relating to the principles and maintenance of public health for presentation at the meetings of the General Association, from the members of the Association and from suitable outside sources. Such papers shall, so far as possible, relate to matters of general interest, technical and special papers being referred to those sections to the work of which they appear to relate. Papers and reports of special committees shall be limited to fifteen minutes for delivery. Relevant discussion shall not be limited except by vote of the Association, but no one speaker shall occupy more than five minutes consecutively. Any member of the Association may take part in the discussion at any section meeting, subject to the constitution and by-laws of that section. The Programme Committee shall make out and print the programme, fix the order of business for the annual convention and report the same to the Executive Committee at its first meeting thereafter. Such programme and order shall not be changed except by vote of the Executive Committee.

ELECTIVE MEMBERSHIP.

Chap. 5. Applicants to elective membership shall be proposed, on forms provided for the purpose, by two members in good standing in any class. The application shall be forwarded to the Treasurer of the Association, who is ex-officio chairman of the Committee on Membership, which committee shall decide to what class the applicant is eligible —thereafter the application shall go to the Executive Council for approval and election.

The Treasurer, as chairman of the Committee on Membership, shall notify applicants who have been elected that they will become members upon payment of the membership fees.

If a duly elected applicant refuses or neglects to forward his fee to the Treasurer within three months of notification of election, his election shall become void.

DELEGATE MEMBERSHIP.

Chap. 6. Delegates, presenting approved credentials, shall be classified as Associate Members. On registration and payment of the regular annual fees they shall be entitled to all the privileges of their class for the meeting to which they are delegated, without election.

ANNUAL FEE.

Chap. 7. The annual fee shall be $5.00 for active and $2.00 for Associate Members, due and payable on election, and annually thereafter. No member of either class, shall be entitled to enrollment at an annual meeting, to a badge of membership, or to the privileges of the Association, until his dues are paid to date, except that if arrearages exceed two full years' fees, payment for two past years and the present year shall restore him to full standing.

Honorary members are exempt from fees.

TERMINATION OF MEMBERSHIP.

Chap. 8. Failure to pay fees for three years, if proper notice of delinquency be served by the Treasurer, shall terminate membership, but the Committee on Membership may on application restore such members, if otherwise eligible, to full standing on payment of the arrearages.

An unanimous vote of the Executive Committee, if confirmed by a two-thirds vote of the Association members present at a regular session of a regular meeting, may terminate the membership of any member.

AMENDMENTS.

Chap. 9. Amendments to the by-laws of this Association may be made by the presentation of the proposed amendment, in writing, at a regular session of an annual convention and the acceptance of such by a unanimous vote of the members present at such session, at least one full day having intervened between the presentation and adoption; or the amendment may be proposed at one annual convention and voted on at the next, and a two-third vote in favor shall then be necessary for the adoption of the amendment.

INTERNATIONAL

Fifteenth International Congress on Hygiene and Demography.

During the last week of September, 1912, the Fifteenth International Congress on Hygiene and Demography is scheduled to be held in Washington, D.C., although some correspondence is now being carried on with a view to amalgamating this congress with the Fourth International Congress of School Hygiene to be held in Buffalo in the summer of 1913.

The Congress of the United States, by a joint resolution passed in February, 1907, authorized an invitation which was formally presented to the Fourteenth International Congress on Hygiene and Demography, meeting in Berlin in Sep-

tember of the same year.

More recently the invitation has been confirmed by a circular letter of the United States State Department.

An important feature of the congress will be an exhibition illustrating all the important phases of public health work and the registration of vital statistics. The director of the exhibition will be Dr. J. W. Schereschowsky, of the United States Public Health Service.

There will be general and section sessions. The topics for discussion are grouped under nine sections, each section having a president, vice-president and secretary of its own. The opening and closing meetings will be open to all the sections. The topics for discussion are arranged for the interim.

A deluge of papers upon every subject bearing any relation to hygiene is anticipated. The history of the hookworm will be gone into exhaustively, in order to get at the economic aspect of the disease of that name.

A maximum of twenty minutes will be allowed for each paper, and the subjects of the stated ones will be open for general discussion. In the discussions the speakers will each be given but five minutes.

The congress will undertake to pass resolutions on no scientific question, but formal propositions may be acted upon at the general closing session.

There is a growing sentiment among the members against convening the congress every three years, as in the past, with the single exception of the last instance. Five years ago at Berlin a five-year interval was agreed on. Even more vigorous opposition to the triennial plan is expected to develop here next year. The scientists are said to be now almost unanimously of the opinion that the exigencies of their business do not demand an international conference oftener than once in five years.

The convention is expected to rival the International Tuberculosis Congress in size. About 2,000 delegates from all over the world probably will attend. Twenty-one countries, it is expected, will be represented.

The sections are as follows:

Section 1.—Hygiene microbiology and parasitology.

Section 2.—Dietetic hygiene. Hygienic physiology.

Section 3.—Hygiene of infancy and childhood. School hygiene.

Section 4.—Industrial and occupational hygiene.

Section 5.—Control of infectious diseases.

Section 6.—State and municipal hygiene.

Section 7.—Hygiene of traffic and transportation.

Section 8.—Tropical, military and naval hygiene.

Section 9.—Demography.

Second International Conference, on Cancer Research. Official Report.

An official report by Dr. Bashford, General Superintendent of Research and Director of the Laboratory of the Imperial Cancer Research Fund, on the second International Conference on Cancer Research, held in Paris from October 1 to October 5, 1910, has now been issued as a British Parliamentary paper (Cd. 5590). Dr. Bashford attended the Conference as the representative of the British Government. He gives a brief account of the proceedings, and concludes with the following observations:

"Reviewed as a whole, the Conference must be pronounced to have been of value. In my opinion, should another International Conference take place, it will be held under much more favorable auspices both as regards working arrangements and the selection of subjects for discussion and action, notwithstanding the fact that knowledge of cancer is still so vague or ambiguous as to have prevented unanimity, or even a basis for discussion, from being obtained on many points at the Conference in Paris. In particular the delegates were divided upon such fundamental matters as the etiology of cancer, and on what is and what is not a legitimate application of statistical methods to the investigation of the frequency of cancer. Whilst some delegates of high standing advocated its parasitic or infectious nature, others of equal authority strongly opposed such a view.

"No progress was made towards compiling comparable international statistics of the incidence of cancer; nevertheless, in my opinion, the discussion of the plan proposed was a pressing need, of which the importance is but emphasized by the fail-

ure of the project to secure the approval of the delegates. Only good can result from discarding those fallacious methods by which attempts have been made to arrive at a speedy elucidation of the significance attaching to variations in the numbers of the deaths recorded from cancer in different countries at the same time, and in the same geographical area—large or small — at different times. These methods have been widely adopted in various European countries, and consist in taking a "cancer census," or enumeration of persons ill of cancer on a particular date, by means of inquiry forms filled up voluntarily by members of the medical profession. The decision was arrived at in 1902-3 to recommend that such a method of investigation should not be adopted in this country. The wisdom of that decision would appear to have been endorsed by the attitude of the Conference towards the project laid before the delegates, for the compilation of international data of a similar kind, more particularly because many of the delegates also recognized what has often been urged in vain in the past—viz., that the statistics of cancer cannot be treated apart. They are inseparably bound up with vital and mortality statistics as a whole, and an improvement in the value of the statistics of cancer, for the purposes of comparisons between different countries, can follow only from raising the general level of all the vital and mortality statistics of different countries. Such considerations, and others — *e.g.*, that a "cancer census,' far from avoiding the fallacies inherent in all statistics of mortality from cancer, but exaggerates them, aparently influenced the delegates. The attitude of the Conference towards the statistical investigation of cancer marks a distinct advance towards what accurate statisticians have long recognized as the only sound lines of investigation; but it must also be pointed out that under exceptional conditions a "cancer census' may possess advantages for special purposes.

"So long as so much divergence of opinion due to continued ignorance prevails, it is obviously hopeless to attempt to devise rational measures and futile to promote an international crusade for the prevention or reduction of the ravages of cancer, along the lines which are meeting with world-wide acceptance in the case of tuberculosis and leprosy."

UNITED STATES

New York's Registrar of Records on Defeating Disease.

The vigorous campaign against disease which has been waged by public and private agencies during the last few years has yielded results that should encourage still greater efforts. New York's city registrar of records reports that 13,000 more persons would have died in that city last year if the average death rate for the period from 1900 to 1909 had prevailed. The diminution in the number of deaths from tuberculosis and pneumonia was especially noticeable and it was against these diseases that the bureau of health had been particularly active. While some of the agents of the bureau have been going about the city preaching the gospel of fresh air, others have joined with the tenement house commissioners in seeing that landlords provide the means of ventilation. Thousands of rooms that were previously without windows have been given light and air. It is not surprising that the deaths from foul air diseases should have diminished. Another gratifying feature of the report relates to infantile diseases. It is asserted that the work of the bureau was responsible for the saving of the lives of 6,000 children under five years of age.

There is no question that aggressive, well-managed departments of health such as those of Pittsburg and the State of Pennsylvania, are worth far more than they cost. We are coming to learn that there are few diseases that are not preventable. Campaigns of education conducted by the authorities have taught the public how it may protect itself against tuberculosis and pneumonia and typhoid. The proverb says a man is either a fool or a physician at forty. People generally are coming to appreciate the numerous common sense methods of warding off disease, and with that knowledge which is power are ably seconding the efforts of the medical experts in their behalf.

American Academy of Medicine and the Source of Infantile Paralysis.

As Havana harbor was cleared of yellow fever for the protection of the world, so Scandinavia, as the source of infantile paralysis, must be freed from that disease for the safety of other countries, according to Dr. Jacolyn Manning, of Eau Claire, Wisconsin.

The doctor, who has been delivering in New York a series of lectures before the American Academy of Medicine, says:

"All our infantile paralysis appears to have come from Scandinavia. There in those little homes, where the people, through the long dark winters, live in close, dark quarters, in proximity to their animals, we find much infantile paralysis. Now, there is a sailor in nearly every family there, and naturally he carries the germs to other seaports, whence they are carried inland.

"The true way to meet this disease is to stamp it out of Scandinavia."

Chicago's Engineer on the Conservation of Life.

"The time is now ripe," says Langdon Pearse, sanitary engineer of Chicago, "to call attention to a very important, perhaps the most important, conservation of natural resources that can possibly be considered, namely, the conservation of human life, particularly by the prevention of diseases which are spread through lack of cleanliness and by impure water supply. Of these diseases, typhoid fever is the most prominent, as the typhoid bacilli can be carried by water.

"The direct transmission of typhoid and cholera by water has been known for many years, and many striking instances of great loss of life have been chronicled where an epidemic resulting from a polluted water supply has been definitely traced to a single source of infection. Numbers of innocent people have been cut off in their prime through drinking water upon whose purity they relied. I shall show how it is possible by purifying the sewage to protect our water supplies from gross pollution.

"It is possible at a moderate cost to remove or greatly reduce the obnoxious elements. One of the great requirements of a pure water supply is the freedom from infection by water-borne diseases.

"There are numbers of authentic instances of typhoid infection, but I will content myself with one on the Kennebec, in Maine, which I personally investigated. You can se geographically how the infection travelled down-stream, as the sewage from Waterville reached Augusta, only 17 miles below, and then how a small epidemic resulted in the little town of Richmond, some 25 or 30 miles further down stream. All this might have been prevented had the cities possessed the foresight to purify the river water or to use some other source of supply than the sewage-laden Kennebec. With the lesson of continuous epidemics in mind, both Waterville and Augusta now use sources of supply remote from the river, and comparatively free from contamination, with the result that their typhoid fever death rate has lowered to a normal figure.

To bring the illustrations closer home, I have diagrams of three of the lake cities, Toronto, Cleveland, and Milwaukee, which illustrate to you how conditions grow, which at any time may become serious. In Cleveland nearly all the sewage is discharged from the mouth of the Cuyahoga river in a straight line toward the water works intake, less than four miles away. While the use of the four-mile intake has reduced the typhoid fever death rate much below that prevailing at the time when the water was taken from the old crib a mile away, there has been, however, a slight but gradual increase of typhoid since the change, which will probably continue until some means are provided either to treat the drinking water or to remove the infection from the lake. It is only a question of years at the most when such conditions will result in sickness or in grave typhoid epidemic

"At Milwaukee, the conditions have already become so serious that a commission of engineering experts has been studying the question for nearly two years to recommend the immediate steps which must be taken to improve the situation.

"In Chicago, the sewage was discharged into the lake prior to the opening of the drainage canal in January, 1900, and the diagram of the typhoid death rate shows very clearly what a marked influence was exerted on the death rate by the removal of the sewage.

"Now, you may ask what are the means at hand for effecting bacterial purifica-

tion and removing the sediment from a water. The most efficient to-day is filtration. It is possible, in the case of a fairly clear water, where the removal of bacteria alone is required, to effect it very thoroughly at slight cost by the application of small amounts of hypochlorite of calcium, or so-called 'bleaching powder,' without detriment to the citizens. Over 98 per cent. of the bacteria can be killed in this way.

"A filter plant, however, is the only safe and permanent solution of the problem, for the function of a filter plant is to remove the bacteria as well as the suspended matter, or the mud in the water. With modern construction, at moderate cost, it is possible to remove 96 to 99 per cent. of the bacteria and deliver a clear, sparkling water.

"Unfortunately, cases are now beginning to multiply among the cities and towns located on the great lakes and smaller bodies of water, where the great increase in population in the last decade necessitates the treatment of sewage as well as the purification of the water supply. The best example of this is the sewage and water works being installed at Toronto to-day. There are few instances where water supplies have been protected by diverting the sewage from the supply as was done by Chicago.

"Sewage farms are seldom used to-day. Berlin and Paris are the great exceptions, and even they are studying biological methods. In Berlin the sewage farms occupy an area twice that of the city in acreage, and are a grand real estate speculation rather than a sewage disposal scheme.

"In any scheme the sewage disposal and water purification should be considered as a whole, from the standpoint of total cost to the community, particularly in cases where the sewage must be discharged into the body of water used for a drinking supply. It is usually cheaper to filter a lightly polluted water supply than to provide adequate means of sewage disposal. However, some treatment or preparatory process should be applied to the sewage even if the water is to be filtered.

"There is an added reason for the treatment of the water since such insures against all pollution. Treatment of sewage still leaves open a gateway for casual pollution from passing boats, which is very real in the case of the lake intakes, where millions of people pass within gunshot of the intakes yearly. The typhoid rate on lake steamers, strange to say, is much higher than on land, so that the steamers are carriers of typhoid."

An Opinion from the Massachusetts Institute of Technology.

In a recent paper on the work of boards of health in small cities, Selskar M. Gunn, formerly health officer at Orange, N.J., and now connected with the sanitary research laboratory of the Massachusetts Institute of Technology, presented a number of considerations of exceedingly practical interest. While it is true that most of the important advances in public sanitation have come through the needs and experiments of large cities, their methods are not always within reach of the smaller municipalities.

First of all, Mr. Gunn calls for the care of all records of vital statistics to be in the hands of the Health Department. "This is essential," he says, "so far as records of deaths and births are concerned and the time will probably come when the marriage licenses and certificates will also be looked after by the boards of health." The place of vital statistics has not yet been properly understood as a valuable aid to sanitary science. If scientifically applied and interpreted they are the instrument for measuring the sanitary status of a community and they ought to point out the weak spots and thus indicate where especial effort should be applied. They are the measure of improvements in the health conditions, but it is to be remembered always that they must be accurately kept, for if unreliable they are worse than useless. In looking over the reports of a large number of small cities, Mr. Gunn is struck by the number of these cities that have not yet proper control over such essential records.

One of the revolutionary attitudes assumed by this investigator is that the abatement of nuisances is police work under modern conditions rather than that which should take the time of the Board of Health. Sanitarians are realizing more keenly every day that the vast majority of these nuisances that take up so much time, are not health matters, and do not affect to any very appreciable amount the public health. This is particularly true, he finds,

in the small city which is fortunate in having a good water supply and sewerage system, since then the outhouse, the leaky cesspool and the resulting pollution of wells is avoided. The latter are, of course, nuisances of sanitary import. If the health officials can be relieved of this work they will be able to devote more of their time to the consideration of the real health problems. The police ought to attend to such things as unsightly dumps, ash heaps, dirty cellars, noisy phonographs, cackling hens and the like. The modern trend is further towards making the plumbing inspector responsible to the city engineer; "and this is as it should be," says this author.

"There is one subject that I fear is not getting the attention it deserves," continued Mr. Gunn, "and it is a very important factor in the health condition, the housing problem." Many of the small cities have bad conditions not only of occupancy, but of construction. The great problem is perhaps not so much the eradication of existing unsanitary conditions, necessary as this may be, but the enactment of such legislation as will prevent the erection of buildings that will be the despair of succeeding generations of health officers It may be more dramatic to carry on a vigorous campaign against existing bad housing conditions than to advocate work for legislation to arrest this growing evil, but the latter is really a truer prophylactic endeavor and more worthy the attention of boards of health It would seem as if the time is ripe for concerted action in order to obtain state laws that shall make it impossible for the small cities to have the overbuilt and unsanitary areas of dwellings that now exist and are being increased.

The subject of the annual report of the board of health of the small city was a further topic on which Mr. Gunn has made an interesting investigation. The Institute of Technology at the suggestion of the speaker requested from a large number of small cities their 1909 report. One hundred and seventy-five such cities were addressed, having populations between twenty and fifty thousand. Of these cities, it is hardly creditable to the country to note, that only 77 made reply, about 44 per cent. Thirty-nine sent the report desired, three furnished monthly reports and ten said that the report had not as yet been issued although it was Aug. 1, 1910, while 25 wrote to the effect that they issued no report. Thus, less than one-quarter of the cities selected could furnish to the Institute a report of their vital statistics. From his own correspondence Mr. Gunn was able to increase the number of reports examined to 56. Twenty-five are from Massachusetts cities and it is easy to see that on the average they are more satisfactory than the reports of the cities in other states.

The striking feature of the reports is their wide divergence. There is a great lack of uniformity and little evidence of any plan whatsoever in most of them. The fact seems to be forgotten that the reports are for the use and information of others not within the city itself. The good report has a very wide field. It enables others to see what methods are in use and the results obtained. It is a general clearing house of facts relating to sanitary methods. "You may be surprised to hear," said Mr. Gunn to the audience that he was addressing, many of them the officers that had prepared these very reports, "that in 24 of the 56 reports there is no hint of the population; this omission being observable in half the reports from Massachusetts." In the classification of deaths no regular system prevails, although there is an international one in use throughout the world in the larger cities. The smaller ones often adopt an alphabetical arrangement. It is a sad commentary on the intelligence of a registrar when phthisis is set down in the p's and tuberculosis in the t's. One record gives six deaths from phthisis and 37 from tuberculosis, and in other diseases it is not infrequent to find the several names of the same disease recorded as if they were different ones. According to one statement, out of all the contagious diseases reported to the health officer there were only three deaths, but two pages later one may find in the tabulation four deaths from diphtheria, seven from typhoid fever and ten from pulmonary tuberculosis. Such things ought to be impossible in an official report even from a small city.

Mr. Gunn found that birth statistics and infant mortality figures are usually entirely omitted. "I was not able in any of the reports to find statistics that would give the number of deaths of infants under one year of age per thousand births. This deficiency, by the way, is not confined to the reports of the smaller cities, for another investigator of two years ago could find among the large cities of the country the

corresponding figures for not more than a dozen in all.

Financial statements of the expenses of the health departments were found in 32 reports. "We must tell how much, or, perhaps more often, how little we spend," said the speaker; "other cities need this information. The salaries are often lumped; they should be given in detail. We ought to let the people know how little we pay the officials that are guarding our health."

As the last item in a comprehensive report, Mr. Gunn considered the relation of the health office to popular education in health matters. It is persons rather than things that are the chief causes for the spread of infectious disease. Contact infection is coming to be considered the most important means of infection, and in order to combat this method there must be better education and a better understanding of how disease is distributed. This can be accomplished only by progressive boards of health that constitute themselves missionaries of the gospel of sanitary living.

Rockefeller Maps of the Hookworm Belt.

Interesting maps are a feature of a report of the administrative secretary of the Rockefeller Sanitary Commission, which is operating with the Tennessee Board of Health in fighting the hookworm. These give the result of a superficial study of the distribution of the hookworm. It has gone to work more systematically in the southern states than elsewhere and, therefore, there are more marks in the maps of counties in the southern states to indicate the contagion than elsewhere, but there is not a continent without telltale signs, referring to official information that has been gathered by other experts. South America, Cuba and the other islands of the West Indies, Mexico, Central America, England and other parts of Europe, practically every part of Africa and the whole of Southern Asia from India to Corea, are included in the hookworm belt. Australia and the islands of the Pacific are also known to be infected.

Another noteworthy fact mentioned in this report is that Florida had begun a systematic campaign against the hookworm before the Rockefeller commission was organized. That state appropriated liberally for the work of the Board of Health, and it has been able to do more effective work in enlightening the public about the causes and the cure and the prevention of hookworm than any other.

A Philadelphia Warning Against Trichiniosis.

Dr. Joseph S. Neff, director of the Department of Public Health and Charities, Philadelphia, has made a report calling attention to the fact that there were lately a number of cases of trichiniosis reported to the bureau of health, including one death from the malady. He warns the public against the eating of meats, particularly pork, which are not thoroughly cooked, and also describes symptoms by which the disease may be recognized.

Dr. Neff says: "Trichiniosis is a disease caused by the eating of meat — particularly pork and sausage — containing a parasite, or small animal, which lies coiled in the muscular fibre of the meat. Their entrance into the human body is made known by a variety of symptoms well known to physicians, which cause extreme exhaustion and in most cases death. The disease appears only in those individuals who do not properly cook their meats. Such persons are advised, therefore, to thoroughly cook all pork products, which will eliminate all danger from this parasitic disease.

"All cases of this disease found in Philadelphia have been carefully studied, and it has been found that the pork partaken of by those ill with the disease came from western packing houses, concerning which the United States Government has been notified. It is believed that this meat has been sold particularly in the southeastern section of the city.'

The Illinois Commission on Occupational Diseases.

The report of the Ilinois Commission on Occupational Diseases, recently made, is an important contribution to the literature of industrial hygiene. While other parts of the continent have made some inquiry into industrial accidents, Illinois is the first state to take up the study of industrial diseases. The commission has had only ten months in which to work, but has submitted an epoch-making report.

Limited time and funds made it necessary for the commission to restrict its work

to poisonous trades, those studied being the lead trades, brass and zinc trades, and trades involving exposure to carbon monoxide. The report on the lead trades shows that lead poisoning is probably the most important industrial disease to be found in Illinois. Twenty-eight trades in which lead poisoning occurs were found, including painting, plumbing, making of storage batteries, manufacture of paints, polishing, cut glass, handling of lead-colored wall papers, etc.

In one Illinois factory employing 142 men, partial inspection showed 25 suffering from lead poisoning. In a factory employing 94 men, 20 per cent. were poisoned. The report on the brass industry showed that brass founder's ague is comparatively common except in well ventilated foundries. Only four out of 89 factories visited were found to be free from this disease. The most startling effect of this disease is the shortening of life. Out of 1,761 brass founders, only 17 were over 50 years of age.

Carbon monoxide poisoning exists in steel works, being due to exposure to gases generated during smelting. An examination of 240 workmen in steel plants showed most of them to be in poor physical health and deficient in muscular power. Blood examinations in 68 cases showed abnormal blood conditions in practically all.

The state law bearing upon this matter and which has recently been enacted, aims to protect employes in occupations that subject them to illnesses and diseases incidental to their trade, and provides that:

"Employers shall provide practical working clothing for men who come directly in contact with poisonous materials, fumes or gases.

"Employers are required to provide respirators for the prevention of inhaling poisonous dust.

"Examination of the employes shall be made at regular intervals by competent physicians to ascertain whether any occupational or industrial disease exists.

"The factory inspector shall require the installation of approved devices, means or methods, reasonably necessary to protect the health of the employes.

"Dressing rooms and laboratories, separate from the workshop, shall be maintained for the use of employes or those exposed to poisonous fumes and dust.

"Proper washing facilities, hot and cold water, clean towels and soap; and lockers shall be provided, so that the ordinary street clothes of the employees shall be kept separate from the working clothes. This is to prevent them from carrying poisons to their homes.

"A separate room shall be provided for the employees to eat their meals, so that so that they will not keep their food or eat their meals in rooms where it might be poisoned by dangerous acids, poisonous substances or injurious gases.

"Where practicable, the installation of approved devices for carrying off all poisonous or injurious fumes or gases from any furnace shall be installed.

"A proper system of sweeping is required where poisonous dust collects upon the floor.

"The floor shall be constructed and maintained in smooth and hard condition, and sweeping is not to be permitted during working hours.

"The employer shall post in a conspicuous place in every workroom where the dangerous process is carried on, appropriate notices of the known dangers to the health of the employees engaged in the dangerous processes, and simple directions of the means of avoiding serious consequences thereof. The board of health and state factory inspectors are to prepare these notices.

"The state factory inspector is to enforce the law. Violations are punishable with a fine of $5 to $100 for the first offence, and $50 to $200 for the second offence.

Church Deaths from Tuberculosis in the United States.

Relating to the poor ventilation of the majority of churches, statistics showing how serious a problem tuberculosis is to the ordinary church congregation, have been sent to us by the National Association for the Study and Prevention of Tuberculosis.

From reports received from over 725 churches, with a membership of over 312,000 communicants of twenty denominations, and from 208 cities and towns in twelve States in various parts of the country, out of nearly 7,000 deaths in 1910, over 700, or 10.4 per cent., were caused by tuberculosis. This means 2.24 deaths for every thousand members or communicants.

While the percentage of deaths from tuberculosis as compared with other diseases is not higher in the churches, according to these figures, than in the country at large, the tuberculosis death rate, as shown by the church returns, is higher per thousand communicants than that for the general population in the registration area of the United States, which the census bureau gave as 1.67 in 1909.

The National Association does not, however, consider the statistics received from ministers comparable from the point of view of accuracy with those reported by the Bureau of the Census. A sufficient number of returns from a great variety of churches have been received, nevertheless, to indicate that one of the most serious social problems the ordinary church has to sider, is that of the devastation of its membership by tuberculosis. The need for education from the pulpit and in the home is apparent. Every minister is asked to give this subject some attention.

THE EMPIRE AND THE WORLD ABROAD

Great Britain and the Rats.

Great Britain is asking the world to join it in a war for the extermination of rats, suggesting that a rat day be set aside each year and the activities of the civilized world devoted to the fight against the property-destroying disease-spreading rodent. This proposition has met with some favor in Parliament and an effort is to be made to make the plan world-wide.

Scientists in Great Britain have been studying the situation and have reached the conclusion that each rat destroys one cent's worth of grain or other property each day in the year, and, while no accurate rat census has been taken in the United Kingdom, the annual property loss is placed at $75,000,000 in that country. A magazine writer recently placed the loss in this country, from the depredations of rats, at $100,000,000 a year. He placed each rat's share to this contribution at 20 cents a year, instead of 36 cents a year allowed in the figures of the British investigators. There's a question, of course, whether the British rat has a better appetite or whether his food supply comes with less exertion than in the United States.

Jokes and the opinions of scientists aside, it has been established beyond question that rats spread the bubonic plague in San Francisco, and they have been tried and found guilty of being common carriers of other less dreaded but equally menacing diseases. They have deserved the death penalty for ages. This century should inflict it, in view of the work of scientists in proving the rat a menace both to property and health.

Public Health Administration in South Africa.

There has lately been published the text of a bill abolishing the offices of medical officers of health for the four provinces of United South Africa, also the Natal Board of Health, and for empowering the appointment of a medical officer of health for the union, with such number of assistants as may be found necessary. It provides that these should hold registrable medical qualifications, but not for their holding a public health diploma, an omission which, as the *South African Medical Record* has properly pointed out, surely ought to be rectified.

An English Circular on Measles.

In Stepney, England, a special circular has been issued, in which Dr. Thomas, the Medical Officer of Health, warns the public that "Measles is the most dangerous of infant ailments, and causes more deaths than all the other notifiable fevers put together." The circular then continues:

Measles is highly infectious from the commencement of the attack and remains so for four weeks. No child should be deliberately exposed to the infection of the disease.

It must be clearly understood that it is

not "necessary" for children to have measles, and if they can be saved from having it until they are five years of age they are not liable to have it at all.

Measles begins with symptoms of a severe "cold," watering of the eyes, running of the nose, pain in forehead, and irritable cough. At this stage, even before the rash appears, the disease is extremely "catching."

Do not wait until the patient is dangerously ill before calling in a doctor.

Isolate the patient as early as the disease is suspected.

Keep him in bed as long as there is any fever, being careful to protect him from draughts and chills. The latter precaution should be continued for some time after apparent recovery. The patient's chest should be specially protected by flannel or cotton wool.

Watch all children in the family, and isolate them as soon as they show any signs of illness.

The great danger in measles is the tendency of the cold to spread to the lungs, so all exposure to cold must be avoided.

No child from an infected house should be allowed to go to school, or to associate with the children of other families, until the premises, etc., have been disinfected, as measles is easily conveyed by the clothing of persons, not themselves attacked by the disease.

One of the most necessary of warnings given in the document is that which indicates that it is not "necessary" for children to have the disease, inasmuch as it is a very general belief that the normal child is bound to have measles, and the fact that this is also accompanied by the belief that the sooner a child has it the better, is no doubt responsible for a considerable proportion of the deaths due to the disease, which is most fatal to children between one and two years of age.

Such circulars as that quoted above cannot but do good, especially as suggesting certain of the more obvious precautions necessary for preventing the spread of the ailment after it has been discovered to have laid hold on a patient

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Typhoid in Tasmania.

There are some parts of Tasmania where typhoid has given considerable trouble, and the Chief Medical Officer does not hesitate to make the fly and kindred insects the principal agents in spreading infection, but reports that there are other causes, especially in mining districts, where sanitation is of the very crudest form. At present, he says, there is considerable difficulty in dealing with new mining fields with a view to prevent them becoming hotbeds of infection. The haphazard growth of a settlement under which each resident is a law unto himself, the question of the permanency of the field or of rating, besides the absence or direct supervision, are factors causing the usual insanitary conditions, not to mention the carelessness of some of the miners themselves in the disposal of excrement and the selection of water supplies. As the police generally have the issuing of occupation licenses, the co-operation of the Commissioner of the Police has been sought and given. The sanitary condition of the hotels are thereby brought into line with those in other districts, and the local constable assists in keeping the residents mindful of the necessity of observing sanitary requirements as far as practicable. The need for this is very real. In one outbreak it was found that most of the victims had taken food at a particular hotel, and that this place obtained its water supply from a well near two unused cesspits. Flies were also noticed travelling between the foul muck-heaps of the yard and the places where food was kept. Once get a typhoid "carrier' in such a district as this, and there is no limit as to the possibility of infection. The carelessness of human beings has often been the cause of epidemic in places less favored than Tasmania, and the same reason appears to prevail in that country, held up as one of the few perfect health spots of the world.

Native "Compounds" in South Africa.

A few years ago the newspapers had many stories of the awful condition of the "compounds" in the South African gold and diamond fields. They were dirty, unwholesome, insanitary, and everything that was bad. But time has brought its changes, and as municipal life has become established considerable improvement has been made. In his annual report the Chief Sanitary Inspector at Krugersdorp tells us that in 1910 a radical change has taken place for the better in connection with the

housing of natives. "On nearly every mine throughout the municipality considerable alterations have been effected, whilst the action of the Randfontein Estates erecting three new colossal compounds capable of accommodating some 13,000 natives augurs well for the future welfare of the inmates. The construction of these gigantic compounds are of brick under iron roof, impervious floors, adequate heating, lighting, and ventilation, together with regulation iron bunks, all of the above being in strict conformity with the Colored Laborers' Health Regulations. The sanitary arrangements are of the most approved pattern, and this department is fully cognizant with the amount of attention and good work the company referred to has displayed in carrying out our wishes. By restricting the areas on which married native quarters can be erected a material change for the better has been effected, as each company now makes provision in this respect, and thus discontinues the haphazard manner in which buildings were previously erected. The enforcement of municipal health regulations in such a widely-scattered district as this is not effected without a considerable amount of hard work, taking into consideration that housing accommodation is required for some 33,500 colored inhabitants, and to prevent overcrowding is no easy task." We may not like the idea of the "compound" system at home; but we do not altogether realize the conditions prevailing in the goldfields, and we must rest content with the knowledge that health and decency are promoted in every possible way.

Edinburgh and Free Anti-Toxin.

Dr. Williamson, the Medical Officer of Health for Edinburgh, submitted a report to a meeting of the Public Health Committee of the town council last month on the subject of the distribution of diphtheria anti-toxin. Some time ago the British Local Government Board suggested that anti-toxin shiuld be supplied free by Local Authorities. Dr. Williamson reported that it should be supplied free of charge to the medical profession in Edinburgh, to be used in cases occurring in their practice. He further suggested that "swabs" should be obtained from the throats of persons who had been in contact with diphtheria cases, so that they might be examined. The Committee agreed to recommend the free distribution of anti-toxin, and to call the attention of medical practitioners to the facilities arranged for examination at the Usher Institute.

Bradford Sanitary Association and the Pollution of Swimming Baths.

About a generation ago an English traveller in the far interior of Morocco took to himself a signal rebuke from a chief of ancient lineage whose roof and hospitality he was sharing. Forgetting where he was, he urged the need of some vessel of water in which to perform his morning ablutions. Whereupon his host, having none, took him out into his garden, and pointing to his own lavatory — a natural rivulet falling melodiously from a spout into a clear pool—"No Moorish gentleman," said he, "would cleanse his face with water into which he had first discharged the dirt from his hands, when he could get the pure running stream." All depends on custom and the point of view. One man's meat is another man's poison; and he who wonders at the dirt in a Bedouin's faded and weather-stained robes, may himself be the wonder of its bearer, who, in the sun and wind of the spotlessly clean desert almost the livelong day, purges himself by nature's toilet, while the stranger critic at home lives in a huge city (the "Wen," old Cobbett used to call it), breathing the noisome exhalations from the million, and to the Arab's untutored but clear vision cannot know what true cleanliness means.

We boast of the increasing crowds who disport themselves in our costly swimming baths, totally forgetting that while the crowd is unlimited the water in which they bathe is extremely limited; that before the first day of its use it is often no better than dilute sewage; and that one, two, and it may be even three days' service in the purification (so-called) of dirty bodies are demanded of the same filling, at whose bottom next morning may be seen through the still pool the white tiles covered with a dark coat of sediment not seen before the crowd had "cleansed" themselves in it. No doubt in many cases the extreme foulness is partly caused by the many who regard the weekly, monthly, or yearly swimming bath as the only place for purifying the body; but apart

from this the fouling is great. From swimming baths two great benefits should arise besides the fine virile exercise which itself is of the greatest value. First, the art of swimming, which all should possess; and second, the purification of the skin and pores; and bad as the pollution is, some substantial balance of good results from the whole equation. Yet as a purification of the body this method cannot be approved.

Mr. Pearce, of Batley, Medical Officer of Health, has conclusively demonstrated this in an excellent paper contributed to the *Lancet* in September last during the warm dry weather. He shows that there is manifest danger of infection from the use of such polluted bath water. The germs of disease, such as diphtheria and consumption, may be got by bathers to whom the commonest occurrence is the forced swallowing of the fouled water by mouth and nostrils. He has noticed sore eyes in children arising through bathing in infected water, and states that the bath manager at Batley has found the *pediculi capitis* in numbers in the towels after use and in the dresing boxes. He suggests that something should be done to keep verminous persons from using the bath, and that it would be useful to enforce the use of bathing caps by girls. The best remedy, he thinks, would be to exclude all persons not in a state of bodily cleanliness. Here we may ask how far this would go. The real question is, we take it, not only the dirty bathers, but the overcrowding and the use of the polluted water day by day. The cleanest bathers externally are not always continent of the contents of their bodies, and spitting and expectorating cannot be suppressed. Moreover, the air itself in so confined a space as a covered bath becomes fouled, and mingles with the water. In the selection of bathers lies no real remedy of a practicable kind for what is a gross pollution. Outdoor bathing in the canal or a running stream of water agriculturally pure would give reasonable immunity from infection. It is found in many places, as at Oxford, Cambridge, Bedford, and other places where a fine river is at the disposal of the citizens; also for the accommodation of a small part of a great city, Leeds has set a praiseworthy example, which it is to be hoped will be multiplied, by making a large open-air bath at Roundhay Park, with the water of its rivulet flowing continuously through it; and Sheffield and other places are bringing into use similar clear streams within or near their boundaries.

Where this cannot be done, the authorities must look the matter in the face and forthwith stop all overcrowding by a fixed limit to the number of boxes, the refilling of the baths daily, and the strict suppression of all soaping, washing, and expectorating in the bath. These will mitigate, but not abolish, the evil.

Meanwhile, all authorities who feel they can afford it in these days of heavy rates and high standards of valuation should, as far as possible, follow the example of Belfast, which as yet offers no sign of stagnation in its wonderful progress. The corporation have installed the rapid filter plant in their three swimming baths. Two of these are open-air pools artificially supplied with water. These have not been completely emptied and re-filled since the filtration was started a year and a half ago, the only water that has been added being that necessary to supply loss by evaporation, etc. The water, nevertheless, has maintained its brightness, purity and freedom from peat or other color. The process of supply is continuing during the time the baths are in use by pumping out 8,000 gallons per day of used water into the filters. This filtration is reinforced by the special "Rapid" system of chemical precipitation now well known, which operates within the filter, and is claimed to deal efficiently with not ony very fine organic impurities, but with the bacteria themselves, which are destroyed.

Report on African Sleeping Sickness.

The results of further experiments made by Colonel Sir David Bruce and his expedition in regard to sleeping sickness were placed before the British Royal Society recently at a meeting presided over by Sir Archibald Geikie in London. In the absence of Sir David through indisposition, the results were summarized by the Secretary (Dr. J. R. Bradford), who said that experiments had shown that the results of injecting extract of infected flies were similar to those obtained by allowing the flies to transmit the malady directly by biting the animal. That is to say that for the first two days after the fly became infected it was capable of transmitting the

disease. Then for something like 20 days the fly was unable to do so. Then for a prolonged period, the limits of which had not been ascertained, the fly was again capable of transmitting the disease. Other experiments were made to ascertain whether the blood of natives who were under the arsenic treatment (which had at any rate a controlling influence on the disease in prolonging life) was capable of transmitting the disease through a fly. It was suggested at one time that the arsenic might prevent patients from being such dangerous factors in spreading the disease as untreated patients. The experiments showed, however, that flies feeding on such patients might also become infected and transmit the disease.

German Peasants' Physique.

An interesting report on the economic condition of Germany's agricultural class has been published by Dr. J. Kaup under the title "Nourishment and Vitality of the Country Population."

The report contains a great mass of statistics and explanations by the author, from which is appears that the physique of the large German peasant class is steadily deteriorating owing to inferior nourishment. This, as a general fact, is not new, but its exact extent has hitherto been doubted. Judged by the army test, the urban population also as a whole decreases in physical efficiency; but it appears that in certain individual army corps districts where there is no proven physical deterioration in the towns, there is a marked deterioration in the country. Between 1902 and 1908 the percentage of physical efficients among men of agricultural class resident in the country fell from 60.5 to particular provinces.

A further sign of unhealthy conditions in the country is that infant mortality despite better education and hygiene, has as a whole not fallen; and that in some districts it has even increased. Also the birth-rate in the country, particularly in Prussia and Thuringia, falls off, while the death rate diminishes more slowly than in the towns.

According to Dr. Kaup, these and many other unsatisfactory phenomena are due to the deterioration in the feeding of the country population. This is not necessarily due to a falling-off in general prosperity, but to the fact that in the last two decades the peasants have taken to selling wholesome products produced on their own farms, and consuming instead surrogates, colonial wares, alcohol and other products of small food value. The inducement of high prices for milk and dairy products has resulted in the farmers consuming less milk; and to this is attributed the unfavorable infant mortality rate.

In Brandenburg, Westphalia, Saxony, Schleswig-Holstein, and the Rhine province, the consumption of milk by drinking among the peasant producers has fallen to a minimum; surrogates have almost entirely replaced butter; and the once favorite dishes made with milk have vanished altogether. The money received by which they refuse to consume goes on pas farmers and peasants for the milk ducts of little nourishing value, hence a general decline of physique. This decline is so serious a problem that there are even social reformers who propose that the State should forbid the peasants to sell their milk until they have first properly fed their children.

As such State interference would probably have no result, Dr. Kaup attacks the Protectionist system which is the cause of the evil; and points to England as a model for imitation. He points out that the British system of freedom of import for food is the only way of ensuring the sufficient supply of milk which is absolutely essential for the health of the population. During the last twenty years the import of butter into England nearly doubled, and the result is that no strain is put upon the native milk supply, and that four-fifths of the milk production is consumed for drinking, much to the benefit of the population.

Germany, owing to the taxation of food products, is unable to get a cheap supply of dairy products; and this results in the native dairy farms having to supply milk both for butter and for driking. The high prices which result make it increasingly more difficult for the rural population to consume the milk they produce; hence the serious deterioration in physique, high infantile mortality, and other unfavorable phenomena with which Dr. Kaup deals.

Royal College of Surgeons, England.

The quarterly meeting of the Council of the Royal College of Surgeons was held

last month, the President (Mr. Henry T. Butlin) presiding.

The Walker prize of $500, founded to encourage investigation into the pathology and therapeutics of cancer, was awarded to Dr. Ernest Francis Bashford, General Superintendent and Director of the Laboratory of the Imperial Cancer Research Fund of London.

The committee appointed by the Council to recommend for the prize, reported that they had received valuable advice and assistance from eminent American, German, French, Italian and British surgeons and pathologists regarding the work carried out in their respective countries, and had made careful examination of works and papers on the pathology and treatment of cancer written in various languages during the last five years.

In recommending Dr. Bashford for the prize, the committee drew attention to the actual amount of the work carried out during the past five years under his direction, to its systematic character, and to its far-reaching extent, in that it critically tested all the questions relating to the pathogenesis of cancer as they have arisen during this period. They also reported that many important results have also been obtained confirmatory of the work of other observers or materially extending it, and mentioned the valuable assistance which Dr. Bashford has given to investigators, whether British or foreign, outside the laboratory of which he has charge, by the unreserved manner in which he has placed material at their disposal.

The Cartwright prize, consisting of the Cartwright medal and £70, was awarded by the Council to Mr. Henry Percy Pickerill, M.B., L.D.S.Eng., Professor of Dentistry and Director of the Dental School at the University of Otago, New Zealand, for his essay on "The Prevention of Dental Caries."

This prize, which is awarded every five years, was founded by the Association of Surgeons Practising Dental Surgery to commemorate the services of the late Mr. Samuel Cartwright, F.R.C.S., who induced many dentists to become fully qualified surgeons and helped to obtain the institution of a license in dental surgery by the Royal College of Surgeons. The subject for the prize for the five years ending 1915 will be "Oral Sepsis as a Factor in the Causation of General and Local Diseases.'

The Jacksonian prize was awarded to Mr. K. Macfarlane Walker, F.R.C.S., of St. Bartholomew's Hospital, for his essay on "Tuberculous Disease of the Urinary Bladder and Male Genital Organs."

The subject for the prize of 1912 will be "The Embryology and Treatment of Cleft-Palate."

A vote of thanks was given to Mr. Frank Corner, M.R.C.S., for some gifts to the museum and for his services in helping the conservator to acquire specimens, and Mr. Henry Cecil Wilson was appointed assistant prospector in the museum.

Dr. Andrew Wilson's Maidstone Lecture on Germs.

Lecturing at Maidstone, England, recently on the above subject, Dr. Andrew Wilson said that to a large extent the term microbe had a certain gruesome sound, but there were microbes which were good, necessary and essential. Whether we liked them or not, we had them in the world around us, and the work of science was to modify them in the service of man, thus enabling them to discharge useful duties to humanity. In the past we struggled against disease, but did not recognize its cause until the germ theory was discovered. Some 300 years ago there existed a society in Florence for the culture of science, medicine and general knowledge, and one of the subjects debated was "Where did the maggots come which were found in putrefied meat?" Redi demonstrated that they could not come from the meat, because life could only spring out of life, and further experiments showed that no case of infectious disease ever arose out of nothing. Thus had we been taught that every case of consumption, scarlet fever, and typhoid had arisen out of cases that had gone before. This was the great lesson for the world to get hold of, because if we took care of the first cases of any disease we prevented it from multiplying into thousands. He asked them, as sensible men, to think what this meant in the way of pain, misery, money—which was everything—and death. The researches of 300 years ago placed in the hands of the sanitary authority the means of preventing disease, saving life and increasing

of human happiness. Answering the question of what were germs, Dr. Wilson described them as probably the first forms of life to come into existence when the earth cooled down from being a blazing orb. All germs were not evil things; some, indeed, were useful to man. He did not know whether Maidstone citizens took a practical interest in their sewage farm, because germs, called bacteria, were there converting filthy masses of sewage into an effluent so pure that it could be drunk with safety. Again, neither cheese nor the best vinegar could be made without the action of germs, while the work of digestion of food in our own bodies could not be accomplished without their aid. In the course of further interesting information, Dr. Wilson urged the importance of purchasers consuming tinned foods as soon as possible after opening; of brushing the teeth every night in order to get rid of the matter which had congregated from the mastication of food during the day, and which formed a fertile soil for the growth or germs; and specially the necessity of isolating cats and dogs which appeared to be suffering from colds or other ailments, as they often communicated the complaints to the children. In regard to typhoid, he mentioned the singular fact that some patients would retain the germs in their bodies for ten or twelve years. There were about three typhoid carriers in every thousand cases. If we were surrounded by germs, some might ask why we were not always ill. The answer was that all germs were not disease producers, while the body possessed many defences against infection, including the millions of white globules in the blood, which acted as sanitary policemen and were always on the watch for disease germs. When a person became infected it was because the germs were too many for the globules to bolt. Speaking of the bubonic plague and the crusade against rats, he said the disease was caused by a person being bitten by a flea which affected rats abroad and not in England. He suggested that attention should be concentrated upon the rats which were conveyed in ships. As to consumption, he mentioned that one patient would cough up twenty million germs in 24 hours. In conclusion, he dealt with the subject of toxins and anti-toxins, which he described as the crowning triumph of germ science, and contended that the future of medicine would largely consist of providing for every disease an anti-toxin, and making the germs fight themselves.

I want to make the nation more healthy than it is.
The great mass of illness which afflicts us,
weighs us down, and is really preventable. It is a better thing to make
a man healthy than to pay
him so much a week
when he is ill.

Lloyd George, on the British National Insurance Bill.

C. Gordon Hewitt, D.Sc., F.E.S.

Entomologist to the Canadian Government.

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Special Articles

MUNICIPAL SANATORIA

By JOHN W. S. McCULLOUGH, M.D.

CHIEF HEALTH OFFICER OF ONTARIO

About sixty years ago an immortal Englishman, a lover of his fellow-men, especially of those who from poverty, disease or other untoward circumstance were handicapped in the race of life, thus graphically describes in the story of Nicholas Nickelby the disease Consumption:

"There is a dread disease which so prepares its victims as it were for death; which so refines it of its grosser aspect and throws around familiar looks, unearthly indications of the coming change; a dread disease, in which the struggle between body and soul is so gradual, quiet and solemn and the result so sure that day by day and grain by grain the mortal part wastes and withers away so that the spirit grows light and sanguine with its lightening load, and, feeling immortality at hand, deems it but a new term of mortal life; a disease in which death takes the glow and hue of life, and the gaunt and grisly form of death; a disease which medicine never cured, wealth never warded off nor poverty could boast exemption from; which sometimes moves in giant strides and sometimes at a tardy, sluggish pace, but slow or quick, is ever sure and certain."

This description in its essential features will be readily recognized by almost anyone. It is a classical picture of the advanced case of Consumption, and, while no less true of such cases in the present day, some consolation at least may be had from the fact that the number of such cases is not so great as formerly, and that increased knowledge in respect to this disease—as to its cause, the methods of prevention and the care of advanced cases—has in the last three generations materially lessened its ravages.

In England in the year 1851 the death-rate from Consumption was 247 per 100,000 of population. This has so far been reduced that fifty years later it was 136 per 100,000. In Germany during the period from 1877 to 1881 the death-rate was 357.7 per 100,000. From 1897 to 1901 it was 218.7, and in 1902 it had dropped to 190 per 100,000. In the adjacent State of New York the rate for the year 1890 was 205 per 100,000. Ten years later it was 158 per 100,000, and for a period of

Read before the Canadian Association for the Prevention of Tuberculosis, meeting at London, May 17th and 18th, 1911.

25 years previous to 1909 the percentage of all deaths was 11 per cent., in 1909 10 per cent., and last year 9.5 per cent.

Tuberculosis is still, however, a most formidable scourge. More people die from it than from any other disease. Each year sees it destroy 1,995,000 of the world's population. In the United States the yearly deaths amount to 100,000. This means 3,000 a day, or two persons in every minute. In Canada it is estimated that 13,500 persons die from Consumption each year. In this Province 2,511 persons died from the disease in the year 1909, and 1 death in every 13 is chargeable thereto.

These are but a very few of the ascertained facts in relation to the ravages of this disease. The former opinion respecting the heredity of the disease is now disproven. It is the unanimous opinion of physicians that the disease is communicable from the sick to the well largely by means of the expectoration of the careless consumptive. Just as we are able to prevent the spread of other communicable diseases by isolation or segregation of the ones affected, so can the spread of this disease be controlled.

Professor Wilcox of Cornell University says: "A decreasing amount of tuberculosis appears in connection with an increase in the proportion of advanced cases segregated in hospitals or other institutions, and this almost regardless of any and all other factors. A stationary or increasing amount of tuberculosis appears in connection with a failure thus to segregate advanced cases in hospitals or other institutions, and this almost regardless of any and all other factors.

Dr. Arthur Newsholme, one of England's greatest statisticians, says: "No influence except that of institutional segregation has appeared in actual experience in a constant relation to the amount of tuberculosis, and it must therefore be accepted as having been the predominant influence."

Countries like England, Germany and the United States, where the greatest advance has been made in Sanatorium Treatment, show the greatest decline in the death-rate. Ireland, on the other hand, without, until very lately, facilities for the care of its large proportion of tuberculous cases has an increasing death-rate. This leads us at once to the consideration of what is nowadays regarded as one at least of the most important plans of treatment of this disease, viz., by means of the Consumptive Sanatorium.

What are the objections urged against sanatoria? It is said that they are the newest fad of a profession of faddists. This argument falls to the ground when we recollect that in 1747 a Scottish physician in the Highlands of Scotland writing to his friends in London advised that Consumption should be treated in the open air and with a generous diet—the underlying principles of sanatorium treatment.

To a Warwickshire physician, Dr. George Bodington, is ascribed the honor of establishing in the year 1840 the first Sanatorium for Consumption in the world. Like many other new and valuable discoveries in our profession, this plan of treatment met with such determined opposition that Bodington was obliged to abandon his system of treatment and the earliest sanatoria became an insane asylum.

The idea of this English pioneer was taken up by Dr. Brehmer, who nineteen years later (that is to say in 1859) founded the first German Sanatorium for Consumption at Görbersdorf. So that, while Germany is popularly supposed to have the credit for the earliest sanatorium, such credit really belongs to Great Britain.

It is therefore quite clear that the use of institutions for the treatment of Consumption is not a new fad, but, on the contrary, has been in existence for nearly three-quarters of a century, or since the time when the death-rate from this disease began first to decline.

It is claimed that the results obtained in sanatoria do not justify their existence as a special plan of treatment. There are two functions fulfilled by sanatoria:

(1) Their value in limiting the spread of the disease.

(2) Their value in its cure.

As already stated, Consumption, being an admittedly communicable disease, isolation of its victims is as rational as the isolation of scarlet fever, diphtheria, measles or smallpox. No one will seriously question the value of the segregation of the various so-called infectious diseases. It is the well-established and universal

method of their control.

Consumption is not only communicated by the victim of this disease, but the danger to his family and to the community is far more prolonged and far-reaching than that of the zymotic diseases. Consequently, if we take him from his family and in a sanatorium teach him how to live so as not to be in the future a menace to his family or to the community, it must be admitted that the sanatorium represents an exceedingly valuable educational feature, the benefits of which cannot at first sight be adequately estimated. He becomes an apostle of hygiene. His well-trained manner of living after his return home is perhaps the greatest achievement of the sanatorium. Such patients not only improve the sanitary conditions of their homes, but are, in addition, a valuable object lesson to the whole community.

With respect to the cure of the disease, it has been firmly established that the earlier Consumption cases are sent to the sanatorium for treatment, the larger will be the percentage of cures. Cure of the disease may practically be based upon the capacity for work enjoyed by those who have had the treatment, as well as upon the length of time which has elapsed since leaving the institution. Between the years 1899 and 1903 there were treated in German sanatoria about 70,000 cases. In these five years the percentage of cures ranged from 72 per cent. to 80 per cent., increasing as the years went on. This increase is an indication that as the value of the treatment was demonstrated a larger number of cases in the earlier stage were received.

The permanency of the cure may be judged from the fact that from 92 per cent. to 94 per cent. of these cases retained a full working capacity after two years.

Riches' table given herewith indicates the after histories of cases during one to nine years after cure, as measured by their working capacity:

Year.	Total no. of persons treated.	Years after discharge.	Persons enjoying working capacity in 1904 for Full work.	Light work.
1895	56	9	45.5	7.3
1896	146	9	61.2	12.2
1897	218	7	59.2	13.4
1898	251	6	53.7	14.5
1899	306	5	55.7	14.9
1900	296	4	61.0	20.9
1901	215	3	51.6	20.0
1902	175	2	65.5	17.5

These figures indicate not the percentage of those cured, but, of all patients treated whose working capacity was preserved. The fact that eight years after discharge from sanatoria 73 per cent. of those treated were still able to work and 61 per cent. retained a full working capacity must effectually confute the assertion that the clinical results of sanatoria treatment do not justify their existence.

A third objection raised against sanatorium treatment is that it does not pay. Perhaps as good a reply to this objection is the position taken by industrial insurance companies in Germany. These were established about the year 1881 for the purpose of providing relief for German workingmen afflicted with illness. After a few years it was found that, out of the total payments made on account of illness of persons of 30 years of age, more than one-half were due to Consumption. The insurance companies, in order to decrease the large draft thus made upon their resources, undertook the treatment of such cases in consumptive sanatoria, with the result that in the years from 1886 to 1901 the annual death-rate in Germany from Consumption fell from 310 per 100,000 to 190 per 100,000, and during the period from 1898 until 1904 83,000 persons received this form of treatment at the hands of the industrial insurance companies.

The companies then took up the question of sanatoria of their own. Careful investigation showed that, if out of 500 consumptives 140 could be so far restored as to do without sick pay for a year, this would recoup the company for their cost of treatment in a sanatorium and for the erection and maintenance of one of its own.

Examples of the action of the companies are seen in the fact that the Regional Insurance Society has spent on special hospitals a sum of £1,650,000, and that a few years ago representatives of thirty-seven insurance companies met and decided to spend £2,000,000 sterling in erecting and providing sanatoria for their clients.

In addition to the foregoing facts, it may be of interest to cull a few opinions of responsible people as represented by their policy in respect to institutions of this character.

I quote from Dr. David Lawson. The King and Queen of Sweden in 1905 donated for a consumptive sanatorium for consumptive poor £100,000, this being the sum presented to them to commemorate the silver jubilee of their reign. The Queen of that country has, in addition, lent her patronage to the establishment of a children's sanatorium, containing 100 beds, and in 1897 a sanatorium for the Dutch poor was erected and opened under her auspices. His late Majesty King Edward devoted the whole amount of a gift of £200,000 received from Sir Edward Cassell for the purpose of a consumptive sanatorium in England. In 1894 the Emperor and Empress of Austria were largely instrumental in the establishment of the Alland Sanatorium, near Vienna, where the poor are treated free of charge. All over the world philanthropic men and women are giving of their means towards the establishment of sanatoria for this disease.

The Government of Germany makes an annual contribution of £7,000 towards the cost of erecting new sanatoria in Germany. The Governments of the United States, New Zealand and Australia, as well as our own Province of Ontario, all contribute to the erection and maintenance of consumptive sanatoria.

The Maryland Tuberculosis Commission reported that the establishment of sanatoria has proved most valuable in the treatment of this disease.

The Government of the United States has established a sanatorium for the treatment of its soldiers, and also one for the treatment of its sailors afflicted with Consumption.

In New Zealand the M. H. O. has power to compel local authorities to erect sanatoria wherever he thinks desirable. One-half the cost of such is paid by the local authority and the other half by the Central Government. In addition, the Government of New Zealand in 1901 bought 1,000 acres of land and upon this erected a sanatorium for the poor, making a charge only for those who are willing and able to contribute something towards their support. In respect to the care of consumptives, as well as in other matters of benefit to its people, this progressive portion of the British Empire is a shining example to the rest of the world.

Previous to ten years ago the mortality from Consumption in Norway and Sweden was steadily increasing. Since that time the death-rate has steadily decreased, falling in some portions of the country by 50 per cent., and over the whole country 15 per cent. The Government Medical Officer, Dr. Somme, states that the causes of this substantial reduction in the death-rate may be ascribed to:

(1) Tuberculosis laws.
(2) Nursing Homes.
(3) Consumptive Sanatoria.

Switzerland had as long as ten years ago five sanatoria for its consumptive poor. The number has largely increased since then.

Denmark is at present the only country in the world where the provision of sanatoria is now considered fully equal to the demand.

Australia, Spain, Portugal, Roumania, Italy, Egypt, Belgium and Bulgaria all possess sanatoria supported partly or completely by the state funds. Here in Canada there are at least between twenty and twenty-five institutions of this character which are more or less in the receipt of Government aid.

It would seem that these facts show that Governments, the reigning heads of various countries, reputable individuals and responsible bodies all over the civilized world have been for years alive to the value of sanatoria in the care and treatment of victims of this scourge.

What has been the attitude of municipal bodies in respect to this great question? Moscow, in Russia, provides for the maintenance of the sanatorium for the poor of that city. The same is true of Paris, of Belfast, of Newcastle, of Birmingham, and of Liverpool. The public councils of the three southern counties of Scotland have combined to provide for and maintain a consumptive sanatorium for the poor of their counties. The list might be greatly multiplied were it necessary to convince you by any further evidence of the recognized value of these institutions.

In response to the public appeal of Eng-

lish workingmen sufficient money has been subscribed, largely due to the efforts of H. R. H. Princess Christian, to equip a sanatorium of 200 beds at Beneden, in Norfolk. Forty thousand members of the Postal Union have voluntarily taxed themselves to the amount of two shillings per year in order that, should necessity arise, they might have advantage of sanatorium treatment.

It will be readily recognized that the directors of an insurance company are not liable to be swayed by any emotional feelings or any interest beyond the securing of dividends for their shareholders. When we find such men spending millions of pounds in supporting their tuberculous clients in sanatoria, we are fairly justified, I think, in assuming that such directors have concluded that sanatorium treatment pays and that in these institutions they have found the most powerful instrument at their command for enabling them to achieve the end they have in view.

In Britain ten years ago there was but one consumptive sanatorium. Now there are over sixty, and the cry is for more. What does this mean? It means that medical men, sanitary students and the general public have learned the practical value of such institutions and that, in addition, they have realized the truth of von Leyden's words: "There is no specificity in the part of any particular climate in the cure of Consumption, but I think it very essential that the majority of tuberculous patients be treated and cured in the climate in which they have afterwards to live and work."

To come home, I wish to repeat that in the Province of Ontario there died of tuberculosis disease, in the year 1909, 2,511 persons. The average age at which death occurred was, roughly speaking, 30 years. According to the period of average expectancy of life worked out by insurance companies, there was in each instance a loss of life period of about 33 years. The Labour Bureau of the Province tell me that the sum of $100 per annum is a low average earning power of adult individuals. At this low estimate we are losing in earning power each year a sum of $100,000. Multiply this by 33 and we have the total loss of earning power of one year's deaths from this disease—the sum of $3,300,000. This surely is bad enough. We are justified in considering, in addition, the additional expense of, in many instances, years of incapacity, of medical care, of nursing, all of which combined total up an enormous loss to the Province, all or nearly all of which may by proper care and treatment of such cases be prevented.

The Government of the Province of Ontario has provided for the establishment of municipal sanatoria to the extent of $4,000 in each case. In addition, $3 per week per patient is allowed for maintenance and municipalities are empowered to add $3.50 per week per patient.

Under this plan four municipalities have already availed themselves of the provisions of the Act respecting Consumptive Sanatoria. There are at the present time twelve sanatoria in the Province and five dispensaries.

The only objections urged in respect to such sanatoria established within the limits of or adjacent to a city or town are:

(1) that they are a danger to the community,

(2) that they injure business,

(3) that they depreciate the value of property. These objections have no real basis. It is a matter of almost universal knowledge that as a rule business is improved, the population increases, and there is less tuberculous infection in communities adjacent to sanitoria than anywhere else.

Taking thirty-three institutions in twenty-two States in the United States, it is conclusively proven that in 67 per cent. the surrounding property has increased in value. In 23 per cent. the assessed value increased and in over 50 per cent. new residents were attracted. In no instance has it been shown that property decreased in value or population decreased from this cause. There is no place so free from infection as a well-conducted sanatorium for Consumption. In nineteen years no servant, nurse or attendant at Trudeau has contracted the disease. The fact that meat, milk, butter, eggs, cream and other first-class foods are consumed therein in large quantities is surely an argument in favour of, rather than against, business interests.

The existence of a well-conducted sanatorium is a gratuitous advertisement of the city or town as a health resort. It becomes a school of hygiene prophlyaxis and treatment, an educator in respect to this malady of which only those who come in closer contact with it are fully aware.

The best evidence of all against these objections is the long-continued existence in many instances of such institutions within the limits of cities and towns without any evdence of danger to the community, any deterioration of business or injury to property values. There are several in Canada. The Brompton Hospital, in London (England), has been in existence since 1841 and there are many others in the various large cities of Great Britain. In New York City the House of Rest for advanced consumptives has been in existence since 1869, and there is, in addition, accommodation for about 1,500 cases of Consumption in sanatoria or homes within the City of New York. The same is true of other portions of the United States, and there is yet to be advanced the slightest evidence that these institutions have any but a good effect in the neighborhood where they are established.

The advantages are: The patient, not being deterred by a long railway journey, goes to the sanatorium earlier and has, consequently, a better chance of cure. The expense of travel being eliminated, he is thus enabled to make a longer stay. He has the comfort of being able to see his family and friends oftener. They, too, benefit by seeing the conditions under which the patient lives. They see him in pleasant surroundings and their natural prejudices are removed. Their intelligent co-operation is secured. The patient, because of the fact that he can see his friends frequently, does not suffer from homesickness. His increased length of stay prevents his going to work too soon. He does not have to adjust his life to a change of climate. Above all, the local institution is a practical example to his friends and the whole community and will often prove of value to other victims of the disease.

There is no great necessity for elaborate buildings. The patients in the Kendall pavilions at Gravenhurst, where in the severest weather both men and women sleep by preference in what is practically the open air, has convinced me that expensive buildings are not a necessity in the treatment of Consumption.

I have shown, I think, that there is none of the popularly supposed danger to the community from an institution of this kind; that, on the contrary, it is a distinct benefit to any community and one at least, if not the greatest, factor in the care of this disease.

Education of our people about Consumption is of the greatest value. Even members of our profession have none too much knowledge regarding it. But people must be educated in a rational manner. It is a mistake to frighten people, to create a panic in respect to Consumption. The Provincial Board of Health Exhibit is endeavoring in some measure to disseminate such rational teaching. We hope to improve as time goes on. This association has the same object in view. All agencies in the Province should co-operate in so far as possible in this matter, the one aim being to lessen the ravages of this disease, to make the way of the poor consumptive easier, to cure as many as possible, and, above all, to prevent the infection of future generations, the ultimate ideal being to make the disease in Canada as rare as typhus, cholera or malaria. With this attainable ideal before us let us hope that the interest of the Government, of this association and of all who have an interest in this subject will have no relaxation until the happy result shall have been attained and the people of this great Province, as is fit and proper, shall be an example to the world as at once the healthiest and happiest of all.

"From statistics just published in the new Tuberculosis Directory of the National Association for the Study and Prevention of Tuberculosis, it is ascertained that over 600 cities and towns of the United States, besides about 100 in Canada, are engaged in the war against Consumption, and that on April 1st there were nearly 1,500 different agencies at work in the crusade, an increase of nearly 700 per cent. in the last seven years.

"The new directory lists 421 tuberculosis sanitoria, hospitals and day camps;

511 associations and committees for the prevention of tuberculosis; 342 special dispensaries; 68 open-air schools; 98 hospitals for the insane and penal institutions making special provision for their tuberculous inmates; besides giving an account of the anti-tuberculosis legislation in every State and in about 250 cities.

"The new directory, which is the third of its kind that has ever been published in this country, gives the most complete survey of the anti-tuberculosis movement that can be secured, and shows the remarkable growth of this campaign in the last seven years.

"The first directory in 1904 showed only 183 organizations and institutions in the entire United States. The second directory in 1908 reported 649 different agencies, as compared with 1,440 in the new book.

"Taking these figures as a basis, the anti-tuberculosis movement has increased in force since 1904 nearly 700 per cent., and since 1908 over 105 per cent."

THE HOUSE FLY IN RELATION TO PUBLIC HEALTH

By C. GORDON HEWITT, D.Sc., F.E.S.

DOMINION ENTOMOLOGIST, OTTAWA.

Some word of explanation is required of the character of this article, which is one of several which will deal with the problem indicated in the title as fully as the character of the Journal requires. An account of the life-history and breeding habits of the fly will be given; the chief experimental and other evidence which has shown irrefutably that the house-fly is an important disseminator of pathogenic organisms will be considered and the means to be taken to abolish the danger. It has not been possible to complete these articles before the present month and the circumstances render a change of sequence advisable. These circumstances are: the immediate approach of the hot weather and the necessity for taking steps now which will make a consideration of remedial measures at the present juncture of greater practical value than an account of the breeding habits and disease-carrying powers which will be given later.

The postponement of the presentation of the evidence now available as to the danger of the house-fly is rendered to a greater extent possible by the fact that the majority of health officers and others similarly interested and engaged, have already been convinced of these facts and realize that in the house-fly we have an important disseminator of certain zymotic diseases.

The chief breeding places of house-flies are: horse or stable refuse, garbage and privy vaults. The treatment of the fly danger is nothing more nor less than the prosecution of sanitary reform and the substitution of sanitary for insanitary conditions.

The house-fly has been shown to be a public danger, and, therefore, to maintain a breeding place constitutes a public nuisance. The public health by-laws should prohibit, under severe penalty, the maintenance of such public nuisances as is the case in many cities and such by-laws should be enforced in all cases. Until this is done any attempt at sanitary reform and the solution of the fly problem will be almost useless.

Regulations should exist in regard to the proper construction of stables. Plans of stables and the completed structures should be passed in the same manner that plans of sanitary plumbing are passed by the sanitary authority. Such plans and completed structures should include the following important points: a concrete floor and a properly constructed, prefer-

Part 1.—To be continued in succeeding issues.

ably cement, receptacle for the stable refuse. This receptacle must be fly proof and dark. This is an urgent necessity, as the one-horse stable, with its exposed heap of refuse, is the greatest public health nuisance in most Canadian cities. The erection of stables should be forbidden unless these regulations are complied with. Regulations should be passed and enforced to compel owners of stables to remove or have removed outside the city limits all stable refuse at least twice a week from May 1st to October 30th to prevent the emergence of any flies should eggs have been deposited on the manure. Regulations of this nature have been passed in the District of Columbia and in many cities. In the meantime, until authorities are able to pass and put into effect such regulations, the exposed manure heaps, garbage and privies should be regularly treated with chloride of lime. In the case of stable refuse, the owner should have a barrel of chloride of lime near or in the stable, and, as fresh manure is thrown on the pile, it should be sprinkled with the chloride of lime. The manure should then be carted away as frequently as possible. This method has been found effectual in stables containing as many as 150 horses. Not only does the reduction of the flies by this means affect man, but it has a most beneficial effect on the horses, which, not having been tormented throughout the night with flies, are able to rest and are fresher and more ready for work on the next morning.

Action in this respect must be taken at once as the present is the most important time.

Garbage, consisting as it does of waste vegetable, animal and other food products, serves as a most suitable nidus for the reception of the eggs of the fly. Further, the rotting material serves as a source of infection, as evidence in a subsequent article will show.

Garbage should be kept in closed receptacles and the civic authorities should see that the collection of garbage in the summer is as frequent as possible; that is, at least twice a week, and thorough. Householders should be impressed with the necessity of keeping the lid on the garbage can and thus keeping out the flies. As much garbage as possible should be burnt and buried at home. Where it is possible the garbage can should be kept in a dark or shaded place, as flies will not penetrate a very dark place for the purpose of depositing their eggs.

The garbage should not be dumped on public dumps, as this is nothing more nor less than the maintenance of public nuisances by the civic authorities. Every pound of garbage should be burnt and this can be carried out in the most efficient and economical manner by an incinerator.

Every outside privy within the city limits should be abolished. In most modern cities the by-laws prohibit the existence of privy vaults within the city limits. Such by-laws should be enforced. Winnipeg abolished its last box-closet in 1909. Privies which are indescribably filthy exist within many of our cities and are not only unfit for use, but constitute a most serious menace to the health of the community, which no body of civilized and educated human beings should for one moment tolerate. Where cases or epidemics of typhoid occur, such privies serve as the most frequent sources of infection. Frequented as they are by incipient cases and convalescent carriers they become infected and flies breeding in the infected excreta, or feeding on the same, are infected both internally and externally, as experiments have shown. This infection they carry to the food or milk.

Wherever there has been a typhoid epidemic, the health authorities should immediately make certain that every privy that has been used by a typhoid patient, either before or after the illness, is thoroughly cleansed and disinfected and the contents also thoroughly disinfected. If this is not done or carelessly carried out there is considerable danger of a recurrence of the epidemic during the ensuing twelve months, as the typhoid bacillus has been proved to remain in a viable condition on the walls of a privy for twelve months, and there will be millions of flies bred in such excreta and able to disseminate whatever bacteria are contained therein.

It will be seen from the foregoing recommendations that the solution of the fly problem is nothing more than the substitution of sanitary for insanitary conditions, and, in view of the heavy mortality

which is incident to such conditions, there is no excuse on the part of civic authorities for not taking up this problem, which means the abolition of mediæval systems of sanitation and substitution of modern methods for systems which no modern city should allow to exist.

On page XVI. of the advertising section of this Journal is the copy of a circular which has been issued by the Division of Entomology. It is printed on a card and will be sent to anyone making application to me for the same. Health officers might have similar cards printed for distribution.

MASTICATING

By W. E. WILLMOTT, L.D.S., D.D.S, TORONTO

Masticating is generally considered to be merely the grinding of food into small particles, in order to facilitate swallowing and subsequent digestion.

There are other considerations involved, however:—the partial digestion of the food in the mouth; the development of the muscles of the face, thus affecting the expression; the development of the teeth and jaw bones; the development and nutrition of the throat and nasal passages. Mastication is accomplished by the action of the teeth of the lower jaw against those of the upper. In the carnivorous or flesh-eating animals, the movement of the lower jaw is limited to that of up and down and the food is crushed between the very uneven surfaces of the upper and lower teeth, while in the herbivorous or grass and grain-eating animals, the movement is almost wholly sideways, grinding the food between the comparatively smooth surfaces of the teeth. As man's diet consists of a large variety of foods, we find a modification of these two forms in a somewhat uneven surface of the teeth and a very free movement of the lower jaw, forwards and backwards, and from side to side. When food has been taken into the mouth, the tongue moves it back between the posterior teeth, where it is ground into small particles. The movements of the tongue, lips and cheek serve to retain the food in the proper relation to the teeth until it is sufficiently comminuted and mixed with saliva, when it passes backwards and is swallowed. This should not be done until the food is thoroughly masticated and insalivated.

The value of thorough mastication is threefold:

(1) *Mechanical*—The subdividing of the food into fine pieces is of the greatest value to subsequent digestion. The indigestibility of many articles of food is due very largely to the facility with which they may be swallowed without being very finely divided. While meat, eggs, etc., are very readily digested by the fluids of the stomach when in small particles, a lump of either will resist their action for a considerable time.

(2) *Chemical*—During mastication the flow of saliva into the mouth is very largely increased by the reflex action of taste and also by the pressure on the salivary glands, of the bones and muscles involved; the flow of the juices of the stomach is also induced. The object of mastication, the trituration and insalivation of the food, is more perfectly accomplished by this action being prolonged and this, "the first process of digestion being thorough, the succeeding ones in stomach and intestines would proceed with greater ease, with a saving of energy and vitality."*

(3) *Physiological*, or the effect on the jaws and surrounding structures—The muscles of mastication are very large in relation to the bony structures in connection with them. The exercise of these muscles largely influences the nutrition and development, not only of the muscles themselves, but also of the important structures near them, such as the jaw bones, the salivary glands, the soft palate, the tonsils and the posterior portion of the throat and nasal passages. The development of a bone depends considerably on the amount of exercise given the muscles which are attached to it. Hence in a person accustomed from childhood to thoroughly masticate, we generally find the jaws large and

* H. Campbell, M.D., F.R.C.P., (Lond.), in "The A.B—Z of Our Own Nutritions."

shapely, as well as the teeth regular, the tongue and salivary glands large, and the nasal and posterior nasal passages spacious and the membranes of the mouth healthy. As the teeth are developed within the jaws they necessarily share in the nutrition and proper development. If these bones are properly exercised during the formation of the teeth the tooth germs will grow and develop more perfectly and the teeth will be more resistant to caries or decay, the best preventative of which is efficient mastication.

The ample development of the jaws brought about by prolonged masticating tends to the regularity of the teeth, thus providing a proper "bite" or the proper relation between the upper and the lower teeth.

Why do the vast majority of people not masticate properly? There are several reasons, the most frequent, possibly, being "soft" or "mushy" food. This is most noticeable in the case of children's diet. Where the necessity of mastication is lacking, the instinct for it gradually disappears and the child acquires the habit of bolting its food and very soon comes to reject the harder for the softer foods. It is very important for the proper development of the jaw bones and of the permanent teeth that a child should be given food which cannot be swallowed without thorough mastication.

Another reason is some defect in the masticatory apparatus, and this is very common in those who have not learned to masticate properly in early life. The defects may be irregularities in the arrangement of the teeth whereby they do not come into proper relation, the upper with the lower, thus largely diminishing the area of the grinding surface, or the teeth may be decayed or loose and painful upon pressure, or some may be lost. Again, many people hurry over their meals, either of supposed necessity or on account of an acquired habits.

What are the evils resulting from improper mastication? Their name is legion. Possibly the most important is the tendency to take too much food. If the food were of a variety necessitating abundant masticating less would be taken, on account of the longer time and the more labor required, but thorough mastication, even of soft foods, "reduces the amount needful, for the more perfectly the food is chewed, the more perfectly is it digested and the more economically is it disposed of in the system."* An inevitable result of an excess of food or of food insufficiently chewed is a derangement of the digestive tract resulting in more or less serious indigestion or in some cases even in cancer of the stomach or in appendicitis. Again, in those who do not masticate properly in early life the nasal passages and tonsils fail to properly develop, and in later life also, unless mastication is prolonged these parts are deprived of the stimulating effect of increased flow of blood to the parts, brought about by the action of masticating, and hence are more liable to become diseased both in the child and in the adult. There is no doubt whatever that the lack of efficient mastication predisposes the child and the adult to rhinitis, tonsilitis, adenoids and other affections of the throat and nasal passages. "The prevalence of adenoids among moderns must be the result of the modern system of feeding children and the defective mastication which goes along with it."* A sequence of adenoids is "mouth breathing" on account of the posterior nasal passages becoming blocked up. So, also, a sequence of mouth breathing is the predisposition to laryngitis, bronchitis, phthisis, dental caries, irregularity of the teeth, lack of development of the cranial and jaw bones. Another result of lack of abundant mastication is a lack of development of the tongue, salivary glands and jaw bones. The effect on the teeth is very marked. As the circulation in the teeth and surrounding parts is not stimulated, the teeth in infants do not develop properly and after development they are not properly exercised and massaged, while the secretions of the mouth are apt to be scanty and unhealthy. Under these conditions the teeth and surrounding parts are more liable to become diseased. Another result in more mature life is the loosening of the teeth from a disease called pyorrhœa alveolaris or Riggs' disease. Realizing the importance of thorough mastication and the evils arising from the lack of such, what should be done? In the first place, the jaws and surrounding parts should be exercised during their development. As soon as an infant shows any disposition to bite hard substances the instinct should be gratified.

At first, a hard rubber ring may be used, but as the time approaches for the teeth to

erupt a harder substance, as ivory or coral, may be substituted. It is "better, however, to give the child something which is not only hard but nutrient and pleasant to the taste—a chicken bone or a chop bone from which almost all the meat has been removed may be employed. These are not quite as hard as ivory and are, moreover, more attractive on account of the taste."* After the teeth have erupted, the child should still have abundant exercise in chewing, for example, hard toast or hard plain biscuits. Of course other foods will be needful as well, but as this deals only with masticating, mention is made only of the best means to that end.

The same principle should be continued through life, masticating everything thoroughly and at every meal some hard substance.

Once the habit of mastication is acquired the food will not be swallowed before being converted into a fluid. That this habit may be developed and retained through life, it is absolutely imperative that the teeth should be in the proper relation, the upper to the lower; also that they should be free from cavities of decay and firmly fixed in the jaw.

In this connection it should be distinctly understood and implicitly carried out, that every child should make frequent visits to the dentist, and that every one of the first teeth should be filled if decayed, and should be retained in position until the permanent tooth is ready to replace it.

Periodic visits should be made to the dentist by every person and all necessary operations performed in order to preserve the masticatory apparatus in efficient working condition. Even if one or more natural teeth should be lost they should be replaced by artificial substitutes.

In a word, what does efficient mastication accomplish? It divides the food into very small particles; causes a flow of saliva into the mouth, thoroughly mixes the food with saliva, facilitates swallowing, partially digests the starchy foods; excites the flow of digestive fluids in the stomach; develops the muscles of mastication and those of the face, thus affecting beneficially the expression; influences the nutrition and development of the teeth, the jaw bones, salivary glands, soft palate, tonsils and posterior nasal passages; is a preventative, to a large extent, of decay or loosening of the teeth; cures many cases of indigestion.

Surely a sufficient benefit to recompense for the small expenditure of time and labor necessary to accomplish it.

In another word, in what does insufficient mastication result? The food is swallowed before being sufficiently comminuted or sufficiently insalivated; the habit of eating too much; serious derangements of the digestive tract; may induce cancer of the stomach or appendicitis; lack of proper development of the teeth, of the muscles of mastication, of the jaw bones and cranial bones, thus adversely affecting the expression; lack of proper development of the throat and nose, predisposing to rhinitis, tonsilitis, adenoids, mouth breathing, laryngitits, bronchitis, consumption, dental caries and irregularity of the teeth. Surely a great risk to assume in order to save a little time and trouble.

THE RELATION OF BOVINE TUBERCULOSIS TO PUBLIC HEALTH

By E. C. SCHROEDER

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Mr. President and members of the Canadian Association for the Prevention of Tuberculosis, permit me to thank you and your Board of Directors for your kind invitation to address you. I believe it to be unnecessary to enlarge on the pleasure it gives me to be here with you, because it is always a real pleasure to meet, and to be among, active fighters for the welfare of mankind. Furthermore, it must

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be clear to you, who know how much needless suffering and preventable loss of life are caused by tuberculosis, that it cannot fail to be a gratifying event to have a special opportunity, like that accorded me here, to aid in the fight against the commonest and most destructive among the infectious diseases.

My subject is the Relation of Bovine Tuberculosis to the Public Health, and in dealing with it I will confine myself as much as possible to facts. If I should leave the facts to talk about theories, I will try to make the distinction between the two plain, so that neither shall be taken for the other.

To begin with, we have this fact, that the tubercle bacillus is the primary and absolutely essential cause of tuberculosis. We know, to be sure, that the disease is not observed as often among persons who live wholesome, clean and correct lives as among those who have pernicious habits or are guilty of debilitating excesses, or who, through viciousness, ignorance, poverty or carelessness, violate the laws of hygiene. But it makes no difference how people live, or how much they abuse their bodies or their minds, or how seriously they are exposed to the conditions that are appropriately characterized as the fostering causes of tuberculosis, unless the tubercle bacillus finds its way into and multiplies within their bodies, tuberculosis can not and does not affect them. On the other hand, it is not uncommon for tubercle bacilli to have sufficient virulence to cause fatal tuberculosis, at times rapidly fatal, without the aid of the various conditions that promote its development. Hence, the fight against tuberculosis urgently requires that we should try to destroy, or to control and make harmless, all the sources from which tubercle bacilli, of a kind that may attack persons, are disseminated in a way that leads to their introduction into human bodies.

The expression, "tubercle bacilli of a kind that may attack persons," introduces another fact, namely, that there are different kinds or types of tubercle bacilli, all of which are not equally dangerous to public health.

For some years after the eminent bacteriologist, Dr. Robert Koch, discovered the tubercle bacillus and demonstrated that it is the indispensable cause of tuberculosis, alike of persons and lower animals, the sources of the tubercle bacilli that are important for public health were believed to be both persons and lower animals affected with tuberculosis. The ideas that were entertained on the relative importance of tuberculous persons and tuberculous lower animals, as sources of infection were not based on a distinction between the types of the tubercle bacilli that attack different species of animals, but simply on the assumption that persons are more directly exposed in a way that explains the commonest location of tuberculous disease in their bodies, to the infectious material that is expelled by persons than to that expelled by animals.

The general belief attributed pulmonary tuberculosis, or consumption of the lungs, to tubercle bacilli that entered the lungs directly with the respired air; and consumption of the lungs was and is the commonest form in which tuberculosis manifests itself. Tubercle bacilli from tuberculous animals can reach the vast majority of persons only in food products, and tubercle bacilli swallowed with food were believed to cause abdominal, but not pulmonary, tuberculosis. Therefore it was concluded that the human source of tubercle bacilli is by far the most important for public health, and this conclusion remains to this day, though not for just the same reasons, the most rational view we can take of the relative importance of the different sources from which human beings become infected with the germs of tuberculosis.

The first evidence to prove that all tubercle bacilli are not precisely alike was supplied by French investigators, who observed, about seven or eight years after Dr. Koch's important discovery, that the bacilli of tuberculosis in chickens, though closely resembling those of human tuberculosis, are not identical with them. For example, while tubercle bacilli from human beings cause rapidly fatal disease when injected into guinea pigs, those from chickens cause at most a strictly localized, non-progressive tuberculosis. On the basis of this and other differences tubercle bacilli were soon divided into two classes: avian, or those that attack birds, and

mammalian, or those that attack animals.

It is not certain that the human race is entirely immune against avian tubercle bacilli; some investigators have obtained results which seem to prove that their virulence for mammals can be greatly increased, but it is safe to say that they have no considerable, direct importance for public health.

Mammalian tubercle bacilli were all regarded as being identical until the American investigator, Dr. Theobald Smith, called attention, in 1896, to differences he had observed between the tubercle bacilli that are more commonly found in human tuberculosis and those that are, with remarkably few exceptions, the cause of bovine tuberculosis. Dr. Smith made a further communication on this subject in 1898, but it was not until 1901, after Dr. Koch announced, before the British Congress on Tuberculosis at London, "that he did not regard human and bovine tuberculosis as identical and that he believed the latter to be a negligible source of danger for public health," that any widespread tendency manifested itself to distinguish between human and bovine types of tubercle bacilli.

Most of us remember the amazement, I may almost say consternation, with which Dr. Koch's London address was received. But I believe we must agree to-day, irrespective of whether we are advocates or opponents of the views he expressed, that the address was productive of much good, because, backed as it was by his great and well-earned authority, it prompted carefully guarded investigations of the most searching kind, which added materially to our store of knowledge about tubercle bacilli and tuberculosis.

The investigations that were at once undertaken proved that Dr. Smith was right when he described differences between the tubercle bacilli that are of commoner occurrence in human tuberculosis and those that cause bovine tuberculosis, but they also proved that human beings are not immune against bovine tubercle bacilli and that bovine bacilli occur too often in human tuberculosis to be regarded as a negligible source of danger for public health.

And with this we arrive at a point where we can state two more facts, with which our subject must deal: 1, That the tubercle bacilli that attack mammals, including the human species, are of two distinct, but closely related, types, the human type and the bovine type; and, 2, that both human and bovine types of tubercle bacilli are found in human tuberculosis. These two facts rest on the carefully-planned investigations of important and impartial bodies like the British Royal and the German Imperial Tuberculosis Commissions, to say nothing about the work of numerous independent investigators of the highest rank. Together with the two facts previously stated they constitute, for the time being, the fundamental material on which an attempt to measure the direct significance of bovine tuberculosis for public health must rest.

It follows quite naturally, if the tubercle bacillus is invariably the primary, essential cause of tuberculosis, no matter when, where, how or in what species of animals the disease develops, and there are different types of tubercle bacilli, among which one type may with good reasons be called human, and another bovine, that it is fair to assume, when the bovine type of bacillus is found to be the cause of human tuberculosis, that the source of infection was bovine.

On the basis of this common-sense assumption, bacteriologists have examined many cases of human tuberculosis to determine the relative frequency with which human and bovine types of tubercle bacilli are the cause of the disease. The results of most of these examinations have recently been published in an easily accessable form in a fifth volume of collected studies from the Research Laboratory of the New York Health Department. Dr. William H. Park, the director of the laboratory, presents, in the named publication, not only his own work and that of his associates, which forms the largest single series of cases examined with special reference to the types of tubercle bacilli that cause human tuberculosis, but also a careful analysis of the cases examined by others, which his analysis proved to be acceptable as evidence. The cases of human tuberculosis examined by Dr. Park and his associates are especially valuable, as they were not selected, like those of some other investigators, because it seemed

probable for various reasons that infection might have occurred from the bovine source. The following figures are extracted from the work of Dr. Park and his associates:

The total number of tuberculous persons examined in the Research Laboratory of New York City relative to types of tubercle bacilli is 438, and of these 32, or 7 1-3 per cent. showed tubercle bacilli of the bovine type. The 435 persons are divided into three groups, according to age, as follows: 297 persons 16 years of age or older, among whom only one, or less than 1-3 of 1 per cent., showed bovine tubercle bacilli; 54 persons between 5 and 16 years of age, among whom nine, or 16 2-3 per cent., showed bovine tubercle bacilli, and 84 children less than 5 years old, among whom 22, or 26 1-5 per cent., showed bovine tubercle bacilli.

The foregoing cases, with the addition of the total number among those examined by other investigators, which Dr. Park accepted as reliable, after a careful analysis, is 1,038, and of this number 101, or 9 7-10 per cent., showed tubercle bacilli of the bovine type. If the 1,038 cases are divided into three groups according to age we have the following: 686 persons 16 years of age or older, among whom nine, or 1 1-6 per cent., showed bovine tubercle bacilli; 132 persons between 5 and 16 years of age, among whom 33, or 25 per cent., showed bovine tubercle bacilli, and 220 children less than 5 years old, among whom 59, or 26 4-5 per cent., showed bovine tubercle bacilli.

Before discussing these significant figures, as all the cases of tuberculosis on which they are based did not have a fatal termination, it may be well to add the following results obtained from the study of 50 cases of fatal tuberculosis in children under 5 years old. Among the 50 cases, 9, or 15 per cent., were due to bovine tubercle bacilli. The 50 cases included 9 children, who died at the New York Foundling Hospital, and these 9 children, of whom 5, or 55½ per cent., showed bovine tubercle bacilli, constitute a distinct group, which was fed, practically exclusively, on cows' milk.

If we should conclude from the figures I have quoted that the work of New York investigators proves that about 7 per cent. of all human tuberculosis in New York City is due to infection from the bovine source, or that the combined work of investigators in America and in Europe proves that about 9 per cent. of all human tuberculosis is chargeable to bovine infection, the objection would at once be raised that the designated percentages are unreasonably high because children, among whom clinically observable tuberculosis is a much rarer disease than among adults, formed too large a proportion of the total number of tuberculous individuals examined.

If we admit this objection to be valid, we, nevertheless, have several important facts to consider. First, we have the fact that all the investigations that have been made point directly to tuberculous cattle as the responsible source for about 1 per cent. of all tuberculosis among human adults. Can we reasonably ignore an evil that causes as much disease and suffering as 1 per cent. of the tuberculosis that occurs among adults signifies? Second, we have the fact that the evidence obtained from the investigations points directly to tuberculous cattle as the source of from 16 2-3 per cent. to 25 per cent. of the tuberculosis that occurs among children from 5 to 16 years of age. Take the lower percentage, which is based on cases of tuberculosis that were not selected because it was likely they would show the bovine type of tubercle bacillus, and we have evidence which points irrefutably to tuberculous cattle as the source of one-sixth of all the tuberculosis that develops into clinically manifest disease among children between 5 and 16 years of age. Does this encourage us to look upon bovine tuberculosis as a negligible source of danger for public health? And, third, we have the fact that something more than one-quarter of all recognizable tuberculosis among children under 5 years old is due to tubercle bacilli that emanate from the bodies of tuberculous cattle. To those who love children and believe that the highest duty of responsible adults is to make them happy and to guard them against preventable suffering, it is hardly necessary to say, if there should be an inclination or a tendency to undervalue the amount of suffering one-quarter of all tuberculosis among children under 5

years of age means, that Dr. Park, from whom I have quoted so liberally, makes the following omniously significant statement in the last annual report of the United States National Association for the Study and Prevention of Tuberculosis: "When the diagnosis of cases entering the Mt. Sinai Hospital and the Babies' Hospital of New York are examined, it is found that the majority of cases of meningitis supposedly due to the meningococcus are really tuberculous in character. Fifteen per cent. of the cases of bronchopneumonia and marasmus are also found to be cases of tuberculosis."

One fact about the examinations relative to the different types of tubercle bacilli that occur in human tuberculosis merits special attention. If we divide all the tuberculous individuals included in the examinations into two groups, and place those who reached 16 years of age or more in one group and all those younger than 16 years in the other, we practically separate the tuberculous persons in whom the disease, through the discovery of tubercle bacilli of the bovine type is often attributable to infection from the bovine source, from those in whose bodies, with comparatively rare exceptions, only tubercle bacilli of the human type are found. This fact would be less remarkable to me if the frequent occurrence of bovine tubercle bacilli was confined to tuberculous children who have not passed the 5th year of life; that is, to children nearer the age during which milk is the main portion of the currently eaten food, because such younger children may be looked upon as being more intensely and more persistently exposed to bovine infection through the use of milk from tuberculous cows than older children. I have given much thought to this matter without being able to satisfy myself entirely regarding what it teaches about the relation of bovine tuberculosis to public health. We may accept it simply as proving that the human body is vulnerable to bovine tubercle bacilli before it arrives at the age of puberty and then becomes immune against them, or, we may take some other factors into consideration and reach an entirely different conclusion. For example, the undeniable fact that tuberculosis among children, of a kind that does not develop sufficiently during childhood to show its presence by recognizable symptoms, is very common, and the as yet insufficient, but very significant, observations that have been made on the transformability of tubercle bacilli from one type into another, would give bovine tuberculosis a very different and much more important rank as a cause of human tuberculosis.

I will try to make this last statement a little clearer, and to do so I will call your attention to three more facts: First, we know to-day from tuberculin tests made by such considerable authorities as von Pirquet, Hamburger, Moro, Muller and others that the percentage of children less than 16 years of age affected with concealed tuberculosis is a number of times greater than the percentage of human deaths statistically charged against tuberculosis. For those who may doubt that the tuberculin test is a satisfactory means to discover the existence of concealed tuberculosis in the bodies of children, I will add, that autopsy examinations of the bodies of children who succumbed to other diseases than tuberculosis have given results strongly confirmatory of those obtained with tuberculin tests.

Second, the work that has been done on the types of the tubercle bacilli that occur in human tuberculosis has not only shown human and bovine types, but also types that are intermediate between the human and the bovine; that is, tubercle bacilli which some investigators have given the designation of transition or connecting forms between the human and the bovine types.

And, third, some investigators of no mean rank claim that they have actually succeeded in their experimental attempts to transform tubercle bacilli from one type into another type.

With these three facts before us, and the well-known fact that tuberculosis is usually a slowly progressive, chronic disease, in which the entrance of the infecting bacilli into the body and the development of observable symptoms are events that are very often separated by a long period of time, we may conclude that tuberculosis among human adults, if we except the rarer cases of the disease that develop rapidly after the introduction of the infecting bacilli into the body, should

always show either human types of tubercle bacilli or intermediate or transition types between the human and the bovine. Hence, as most persons who contract tuberculosis, no matter at what period in their lives the disease becomes a recognizable phenomenon, take the infecting bacilli into their bodies during childhood, it is more surprising that about 1 per cent. of tuberculous adults show bovine types of tubercle bacilli than it would be if bovine types were never found in adults. The true conclusion as to the importance of the bovine source of tubercle bacilli for public health would then be, not that it is equal to the percentage frequency of bovine types of tubercle bacilli in human tuberculosis, but that it is measurable by the percentage frequency of bovine types of tubercle bacilli in the tuberculous bodies of persons who have not reached the age of adolescence.

But it does not seem necessary to pursue this portion of our subject farther, because I believe I have sufficiently shown that the facts, the absolutely irrefutable facts, emphatically force us to the conclusion that tubercle bacilli from the bovine source are truly capable of causing human tuberculosis, and that the frequency with which human tuberculosis is caused by such bacilli, especially among children, if we give it the lowest, reasonably permissible valuation, stamps the bovine source of tubercle bacilli as a very serious cause of human suffering.

We must now give some attention to the source from which bovine tubercle bacilli are disseminated in a manner that leads to their introduction, alive and virulent, into human bodies. Meat and meat products do not require special consideration, as they are customarily cooked and so sterilized before they are eaten, and because the proper enforcement of meat inspection laws, such as most civilized countries have, eliminates most of the meat that is dangerously infected with tubercle bacilli from use as food. Hence, we may at once turn to those products from animals, milk, cream, butter, etc., that are extensively used as food in a fresh, raw state, and the sufficient purity of which, without the aid of the tuberculin test, no inspection can insure. I do not believe we will make a mistake if we charge the tuberculous dairy cow, under existing conditions, with practically all the human tuberculosis that is not caused by tubercle bacilli expelled from the bodies of human tuberculous individuals. There are no animals that are oftener affected with tuberculosis than dairy cows, and there are no animals to which human beings are more intensely or more continuously exposed.

If you stop to think a moment what milk is and how extensively it is used raw, you will realize the truth of this statement. An animal killed for meat has the interior of its body exposed so that a competent inspector can readily determine whether it is, or is not, dangerously tuberculous. Should the inspector be incompetent or delinquent, we would still be protected because our aversion to raw meat induces us to expose it to a degree of heat before we eat it that is in most instances high enough to kill tubercle bacilli. Then, also, whatever danger a tuberculous meat animal may represent is short-lived and is terminated at once by the use we make of it.

The dairy cow, on the other hand, is a daily repeated source of danger through the human food that is twice daily, day after day, sometimes for years, with only occasional short intermissions, drained from her living body. If she is tuberculous, and she may be and may remain so for several years without showing a single clinical symptom of the disease, and fails to expel tubercle bacilli from her body one day, it is no guarantee that she will not expel them another day, and if she expels tubercle bacilli with her milk, or in any way that may lead to their introduction into her milk or into the milk of other cows in her environment, and does so only once in a while, she is a positive danger which the campaign against tuberculosis cannot afford to ignore and must not undervalue.

The material from which the milk of a cow is derived is the food she eats and the water she drinks. In a general way, the passage of this food and water from her mouth to her udder is as follows: After the material is swallowed it passes into the stomachs and intestines, then, after having undergone various changes, it enters

minute blood and lymph vessels and in these is carried onward into larger vessels and through the latter reaches the heart, from the heart it is pumped with the blood into and spread throughout the lungs, from the minute blood capillaries in the lungs it is again collected in larger blood vessels and returned to the heart, and from there it is pumped out into the body generally. That is to say, the raw material which goes into a cow's mouth and which is returned in the form of milk may have been, and most of it probably has been, in contact with every portion of the interior of her body. Now think of this body as containing cheesy, broken-down and degenerated masses of tuberculous matter, and remember that the ease with which we can detect the taste and odor of fresh grass and wild onions in milk does not tend to suppress the disgust engendered at the thought of using milk extracted from a more or less diseased, tuberculous cow as food. Disgust, in this case, is probably a protective instinct which, if you take my advice, you will not seek to suppress for purely economic reasons.

A fairly common belief exists that the kind of tuberculous cows that are responsible for the presence of tubercle bacilli in milk can easily be detected by an ordinary physical examination. The sponsors for this belief are largely persons who wish to defeat the general application of the tuberculin test to dairy cows for the protection of public health. That the belief is wholly unreliable is the only conclusion the facts warrant.

When I learned, through my studies and those of others, how often ordinary market milk is infected with tubercle bacilli, and compared this with the frequency with which I and others were able to diagnose tuberculosis among dairy cows by means of physical examination, I concluded that the occurrence of tubercle bacilli in market milk could not invariably be attributed to visibly, or clinically tuberculous cows, or to cows affected with tuberculosis of the milk-secreting structures. I recalled, however, that I had examined milk from a large number of tuberculous cows, some of which were badly diseased, though they showed no involvement of the milk-secreting structures, without finding tubercle bacilli in it. This mystified me at first, until I also recalled that I had collected the milk from the cows myself, with careful precautions against its contamination with anything that happened to be in their environment. This lead me to undertake two series of investigations with my assistant, Mr. W. E. Cotton. The one series was a careful study of the channels through which tubercle bacilli are expelled from the bodies of tuberculous cows and the stage of the disease at which the expulsion of tubercle bacilli begins, and the other was a study of the extent to which market milk is contaminated with foreign material and the character of this contaminating material.

The results obtained with the two series of investigations may be stated as follows:

1. The commonest channel through which tubercle bacilli leave the bodies of tuberculous cows is their bowels.

2. Tuberculous cows often begin to expel tubercle bacilli with the discharges from their bowels long before they can be proven to be affected with tuberculosis by a physical examination.

3. The commonest impurity in market milk is material expelled from the bowels of cows, and most commercial milk is to some extent contaminated with this impurity.

As these three facts, which explain perfectly why market milk contains tubercle bacilli oftener than the number of tuberculous cows we can discover in dairy herds by physical examinations would lead us to suspect, have met with considerable opposition, it may be well to say that they now have the support of the important group of investigators that has become famous throughout the world as the British Royal Commission on Human and Animal Tuberculosis. The Commission's work on the subject was published as its Third Interim Report.

After having shown that unimpeachable evidence proves that a fairly large amount of tuberculosis among human beings is due to infection from the bovine source, and that the tuberculous cows that are dangerous disseminators of tubercle bacilli cannot always be detected by a physical examination, it seems to me that

very little need be said about the frequency with which living tubercle bacilli occur in milk and dairy products, or to urge that the protection of public health against the bovine source of tuberculosis imperatively requires that the milk of no cow should be used in a raw state as human food until she has been proven by the tuberculin test to be free from tuberculosis.

In a general way, I may say that the milk regularly sold to consumers in the larger cities of the eastern portion of the United States, according to the samples examined, contains tubercle bacilli with a frequency that varies from 5 per cent. in some places to 15 per cent. in others. Tubercle bacilli in milk adhere with such tenacity to the cream globules that cream from infected milk, volume for volume, contains more bacilli than the milk from which it is derived. Butter made from infected cream is not only infected, but tubercle bacilli may live in it and retain their virulence for many months. In one test, made at the Experiment Station of the United States Bureau of Animal Industry, hogs contracted tuberculosis from eating butter made from infected milk; the butter was three months old at the time it was eaten by the hogs and the amount eaten daily for 30 days was no greater than the amount of butter consumed in the same time by an average human adult. Guinea pigs inoculated with butter 5½ months after it was made contracted tuberculosis. There is no better medium for the preservation of the life and virulence of tubercle bacilli than the moist, bland, opaque character of butter offers. In cheese tubercle bacilli are also found, and in it they remain alive and virulent for a long time. Buttermilk may be infected and in either milk or butter-milk tubercle bacilli remain alive a longer time than is required for these articles of food to become so badly spoiled that they are no longer fit to be eaten. And, bear in mind that these statements are not suppositions, nor opinions, nor theories; no, they are facts that rest squarely and firmly on practical tests that have actually been made. They are no more palatable to me than to others, but when danger exists it is better to know about it than to suffer in ignorance.

If you stop to think about it, these facts make the surprising results obtained by various investigators, who have made numerous autopsy examinations to determine the frequency with which human beings are affected with tuberculosis, seem quite reasonable, though the examinations show that less than 10 per cent. of human adults reach the end of life without having been infected to some extent by tubercle bacilli.

Fortunately, there are two ways in which public health can be protected against the bovine source of tuberculosis. One is through the pasteurization or sterilization of all milk before it is used as a beverage or in the manufacture of butter, cheese and other dairy products, unless it is obtained from cows certainly known to be free from tuberculosis, and the other is the application of the tuberculin test to eliminate all cows affected with tuberculosis from use for dairy purposes.

I do not wish to tire you, but I would like to retain your attention a little longer, because there is another side to the tuberculosis question, relative to the occurrence of the disease among lower animals, that must not be overlooked. We know that good food and plenty of it is necessary to give our bodies the power to resist the development of tuberculosis, and, therefore, anything that tends to reduce the human food supply must be regarded as a menace to public health. Indeed, I do not believe that it is an exaggeration to say that the conservation of the human food supply is the most important public health work any nation can undertake.

How much tuberculosis there is among Canadian cattle I do not know; in the United States it is estimated, on the basis of somewhat inadequate data, that about 10 per cent. of all dairy cows are infected. In the older and more densely settled portions of the United States the cattle are more commonly infected than in the newer and less densely populated portions; in Europe, which is older and more densely populated than America, tuberculosis among cattle is much commoner than in America. To me this means that tuberculosis will gradually increase among our cattle as the population becomes denser, until we have conditions like those of

Europe, or even worse, unless we take active measures to prevent the consummation of an evil of this kind. That it is a real, vital evil, with an important bearing on public health, no one can doubt who knows that in some portions of Europe the demand and need for meat food is so much greater than the supply that dogs are actually slaughtered for use as human food.

The time when we will accept dog and horse meat as suitable articles of human food in America may not arrive during the life of the present or the next generation, but we have no right to leave to coming generations the inheritance of a widespread, food-destroying disease among our animals, a disease which not only reduces the food-productivity of the animals, but which is directly transmissible from them to human beings.

When I review everything I know about tuberculosis and its occurrence among different species of animals, I feel that we have good reasons for concluding that the continued propagation of the disease depends practically on three species, the human, the bovine and the galline; that is, persons, cattle and chickens.

Of course, tuberculosis occurs among other species of animals; among hogs, for example, with serious and increasing frequency. It is the commonest infectious disease of human beings; it is also the commonest infectious disease of cattle. It is remarkable that two such dissimilar species of animals as the human and the bovine should share the distinction of being the commonest victims of an infectious disease that may attack a larger number of different species than any other known disease. It is also remarkable that the tubercle bacilli that emanate from the bodies of tuberculous cattle are more virulent for all species of animals, including the quadrumania, or man's nearest zoological neighbors, than those that emanate from the bodies of tuberculous persons. And then, too, it is remarkable that the human race, which shares with cattle the distinction of furnishing the largest numbers of victims of tuberculosis, should be more intensely and more persistently exposed to cattle than any other species of mammals. Hogs, because of the manner in which they live and the food they eat, next to human beings, are the species that is most intensely exposed to cattle, and hogs take third rank, the highest rank after persons and cattle, as to the frequency with which different species of mammals are the victims of tuberculosis.

And now, unless the observations I have been able to make are exceptionally misleading, hogs have not yet acquired the faculty of perpetuating tuberculosis continuously from generation to generation without the aid of tubercle bacilli that have their origin in the bodies of tuberculous cattle. But what will happen relative to the development of this faculty in the course of time if the increasing frequency of tuberculosis among hogs is not checked indirectly by checking the frequency of tuberculosis among cattle. I am not ready to answer.

I would like to say more on this phase of the tuberculosis question, but I have said more than enough already without going into a discussion that would have to deal, in the light of our present knowledge, largely with theories. Besides, I believe I have shown it to be unnecessary to use theories to prove that bovine tuberculosis is closely related to public health as a cause of serious suffering, first, because it is a direct cause of disease among human beings, and, second, because it is an indirect cause of disease through the increasing amounts of food it destroys and the consequent increased cost of food.

The general conclusions to which I wish specially to call your attention may be briefly stated as follows:

1. It has been proven, absolutely, that bovine tuberculosis is responsible for a not yet well-defined proportion of human tuberculosis, but a proportion that is now known to be entirely too large to be ignored.

2. It has been proven, absolutely, that a large proportion of the tuberculosis that occurs among children is chargeable to the bovine source of infection. And, remember, there are no duties that are more imperative and no obligations that are more sacred than those that concern the welfare of the child.

3. It has been proven that tuberculous cows need not be visibly diseased to expel tubercle bacilli from their bodies in a dangerous way. When it comes to the ex-

posure of food products to persons or animals affected with other infectious diseases than tuberculosis, I don't remember that we ask many questions about the extent to which the individual, or the animal, is diseased. The presence of the infectious disease is accepted as the presence of the dangerous and injurious infectious material that causes the disease, both in the body and in the environment of the victim. We have no valid reasons for making tuberculosis an exception, as is often done, presumably for economic reasons and because it is so widespread and its course, unlike that of more acute diseases, is often drawn out over long periods of time.

4. The satisfactory protection of public health against tuberculosis due to infection from the bovine source requires that we should either pasteurize or sterilize all milk or obtain it from cows proven by the tuberculin test to be free from tuberculosis.

5. Tuberculosis among cattle, apart from the direct infection of persons with bovine tubercle bacilli, is a condition we must fight early and late, until it has been fought to an end, otherwise we will neglect what the proper conservation of the human food supply urgently demands. This means the control and, eventually, the eradication of bovine tuberculosis, and we can go a long distance and spend much thought and money without even approximating the value of the magnificent returns the accomplished eradication of bovine tuberculosis will give, not alone to those who are interested in different branches of animal husbandry, but to the whole people.

Editorial

The British National Insurance Bill.

Mr. Lloyd George's National Insurance scheme—revolutionary in its scope in placing person above property — is founded on the theory that the only real wealth of a State lies in the number of its healthy lives; and in its present bill form is an acceptable, unique and widely reaching legislative recognition of State responsibility in this direction—providing as it does for insurance, of the individual seeking a livelihood therein, against loss of health and for prevention and cure of sickness and for insurance against unemployment and for purposes incidental thereto. The scheme, because inseparable from the inate democracy of the British people, may be looked upon as having none of the dangers of governmental paternalism, and is so powerfully presented and widely and apparently favorably received, that it seems destined, with efficient medical service as the *sine qua non* of its success, to have a deep and incalculable influence on human progres—and on the future of the world at large in regard to the duties of representative governments.

The British Chancellor has described his bill as intended to effect as wide an insurance, and as progressive, as possible against sickness and breakdown among the working population; and as a preventive measure operating to reduce invalidity and the numbers of the unfit generally throughout the United Kingdom. The collection of the operating fund is to rest partly upon compulsion, it being proposed that the "premiums" shall be collected by progressively small deductions from the income of the employee of whatever nationality under contract of service, whether paid by the hour, day, week, month or year; and in part, in certain cases, by contributions of somewhat similar proportions from the employer. There are occasional exemptions from wage deduction noted in the bill, with cases where the employer alone is responsible for the insurance of his employees. And so far as the bill does not rest on compulsion, it is proposed to allow all other persons to join the scheme or not as they may choose, provided that they are engaged in some occupation by which they seek their livelihood—contribution to the fund to cease when the insured is 70 years of age.

It is also proposed, under proper safeguards, to hand over the administration of this fund in part to recognized Friendly Societies, either already established or to be established under the Act. All such approved societies will be governed by conditions embodied in the bill and by the regulations for financing the scheme, which will be so arranged that the deficiency inevitable in starting an insurance which includes all ages shall in 15 to 16 years be completely wiped out and the way then opened for reduction of the pension age and for other increased benefits; the minimum benefits now being: (a) Medical attendance throughout the life of the person insured—termed "medical benefit." (b) Treatment in sanatorial or other institutions when suffering from tuberculosis or such other diseases as the local Government Board, with the approval of the Treasurer, may appoint—termed the "Sanatorial Benefit." (c) Weekly payments whilst rendered unfit to provide their own maintenance by some specific disease or bodily or mental disablement, commencing from the fourth day after notice thereof has been given and continuing for a period not exceeding 26 weeks—termed the "sickness benefit." (d) In the case of disablement continuing after the termination of sickness benefit, weekly payments so long as so rendered unfit by the disease or disablement—termed the "disablement benefit." And (e) payment in the case of the confinement of the wife of an insured person who is not herself an insured person or of a woman who is an insured person, of the sum of 30s—termed the "maternity benefit."

A Copy of the bill may be purchased either directly or through any bookseller, from Wyman & Sons, Limited, Fetter Lane, London, E.C., England; from Oliver & Boyd, Tweedale Court, Edinburgh, Scotland; or from E. Ponsonby, Limited, 116 Grafton Street, Dublin, Ireland. Price 4½d.

At the same time, for the benefit of those persons who fail or neglect to join such societies or are rejected, a Post-office System is to be set up for the collection of funds and payment of benefits; the whole to be governed by a Central Insurance Board.

We believe in this bill; and we believe that in obtaining efficient medical service, the inevitable question of remuneration, for Medical officers employed under the Act whether in connection with the administration of the insurance fund by Friendly Societies or by the Post-office System may be left undoubtedly to the good sense of Lloyd George and his fellow-representatives of the British people. Early regulations possibly antagonistic to adequate medical service, will be rectified; and we believe that this great thoughtful and most praisworthy piece of social legislation, which means a more complete and natural operation of the efferent and afferent nerves of the nation—originating in the sacrifices and discoveries of our medical confreres—will receive the whole support of that profession, whose first aim is the conquest of disease.

Inter Alia.

Dr. Herman M. Biggs, of New York, of the Commission of Health in that city, and a foremost sanitary expert, has said that any city could buy healthfulness if it were willing to pay the price. "There are three great obstacles to city health", according to Dr. Biggs, "First—The lack of trained men, adequate compensation and permanent tenure of office. Second—Reluctance on the part of financial authorities to make the necessary appropriations for sanitations. Third—The lack of co-operation on the part of the public."

The health officer is often selected—a doctor—without special training in sanitation. He receives no decent salary and must practise medicine on the side. With the first change of the political complexion of the administration he may be displaced and another put in his position. And this, too, when the first officer has hardly had time to learn his duties. How can we tolerate such a condition of affairs. If come into play a proper education may continue to be the least of the tests for office and sanitary questions continue neglected.

Thomas A. Edison has the right idea about the use of moving pictures in education. He says that in a few years even grammar will be taught by pictures. Geography, botany, zoology, history, biography, art and much more will be pictured to school children, instead of merely told them in an ineffective way. Hygiene and physics will especially be taught in that way. Information about all the peoples and nations of the world could be gathered in the form of pictures for educational purposes. There is great complaint because of the bad effect upon children of the trashy and crime-depicting pictures shown them in the multitude of picture places all over the country. This complaint is a tribute to the educational value of the moving picture. It points the way like a beacon light. The best way to offset the evil effects of poor or bad pictures is to substitute good ones. The good will drive out the poor. They have already done it appreciably. The better pictures always give the higher satisfaction. If our Boards of Education would modernize themselves and make use of this tremendous educating force, they could accomplish wonders in forestalling and offsetting the effects produced by cheap or improper pictures.

The progress of the health of the pupils in the schools of several of our towns is now marked as carefully as progress in any of the classes. It is likely that the day is not far distant when all our schools will pay the same attention to the health of the pupils that they now pay to their mental development.

The need for such supervision is being more and more widely recognized for the protection of the healthy children, as well as for the improvement of the weaker. A sound mind in a sound body is as necessary in a child at school as in those of more mature years. Defective or backward scholars, it is known, are often the result of physical handicaps rather than mental obtuseness. With progress in health an

political influences are to be allowed to integral part of the school marks, the development of healthy men and women will be promoted, the process of education will be made easier for both child and teacher, and the general results will soon convince the public that the extra attention will be worth vastly more than all it can cost.

While health is not the whole end nor aim of life nor of education, it is the essential condition for the realization of ends, some of them remote, some immediate in the career of every individual. Health is the basis of completeness of body, without which there cannot be completeness of mind, and completeness of character.

Teachers and parents may well repeat this question, "What shall it profit a child if he gain the whole world of knowledge and lose his health?"

The people of this country are rapidly awakening to the appreciation of national resources. The most important of the nation's resources is the health of the people, and the most important part of this capital is the health of the children. It is the business of the State, and since the State must work through the municipality, it is, therefore, the business of every municipality to protect from harm at any cost these children who are the heirs of all that the past has wrought out.

During the schooling period, the teachers become, as agents of the State, co-trustees with the parents in the great task of guarding against injury or loss, those upon whom the entire future of the world depends.

If modern education is to fulfill properly its triple task of serving the child, the home, and society, in the relation to health, certain matters of administration, supervision and teaching, are necessary.

First, there is the investigation of health conditions of pupils. This takes on two great purposes, the detection of contagious diseases, and the discovery of physical defects by which children are often handicapped. This should be undertaken in each municipality by regularly appointed and properly paid specialists.

Second, school environment. The school should be made the most sanitary place in the community.

All the features essential to the health of children in the school—its surroundings, construction, furnishings, and equipment—are within the power to provide of practically every municipality in the country.

Third, the teaching of the principle of healthful living, as related to the individual, the home and the community. An effort should be made to inculcate in a pupil hygienic habits so that his conduct may contribute to the healthful and successful living of himself and of those about him.

Fourth, the provision in the schools for physical training of the pupils. The boy scout and girl guide movements are along this line, and include the free play of pupils in play rooms and on play grounds.

Fifth, with more attention given to the method and material of instruction as affecting health.

Happiness is the normal condition of children—happiness makes for health; and a happy frame of mind is the best condition for good mental work. Happiness does not mean levity or purposeless gaiety; but it means interested, purposeful effort and joy in work. This condition, rightly adapted method and material will produce, in normal children, and these we are striving to get.

Library and Laboratory

The Directory of the United States National Bureau for the Study and Prevention of Tuberculosis.

From statistics published in the new Tuberculosis Directory of the National Association for the Study and Prevention of Tuberculosis, it is ascertained that over 600 cities and towns of the United States, besides about 100 in Canada, are engaged in the war against consumption, and that on April 1st there were nearly 1,500 different agencies at work in the crusade, an increase of nearly 700 per cent. in the last seven years.

The new directory lists 421 tuberculosis sanatoria, hospitals, and day camps; 511 associations and committees for the prevention of tuberculosis; 342 special dispensaries; 68 open air schools; 98 hospitals for the insane and penal institutions making special provision for their tuberculosis inmates; besides giving an account of the anti-tuberculosis legislation in every state and in about 250 cities. The Directory, which is the third of its kind that has ever been published in this country, gives the most complete survey of the anti-tuberculosis movement that can be secured, and shows the remarkable growth of this campaign in the last seven years. The first Directory in 1904 showed only 183 organizations and institutions in the entire United States. The second Directory in 1908 reported 649 different agencies, as compared with 1440 in the new book. Taking these figures as a basis, the anti-tuberculosis movement has increased in force since 1904, nearly 700 per cent., and since 1908, over 105 per cent.

The following table shows the growth of the movement along the principal lines of activity for each year since 1905:

Year	Associations	Sanatoria and Hospitals	Dispensaries	Open Air Schools
Established before 1905	18	111	19	
" during 1905	15	18	6	
" " 1906	18	16	14	
" " 1907	66	30	45	1
" " 1908	109	45	113	2
" " 1909	167	67	89	10
" " 1910	117	68	62	16
" " 1911 (April 1)	21	66	20	39
Total	511	421	342	68

—The Tuberculosis Directory is sold by the National Association for the Study and Prevention of Tuberculosis, 105 East 22nd Street, New York City, at cost price, 50 cents postpaid.

School Hygiene.

The current number of *The Medical Record*, of New York, has an article on "The Teaching of School Hygiene," by Dr. James Burnet, of Edinburgh, Scotland. He emphasizes the fact that in the actual teaching of the subject too much attention is paid to unimportant matters, while others of everyday value to the school doctor are passed over. He urges that cleanliness of the skin and of the scalp should be specially emphasized and great attention should be paid to the clothing of the school child as regards its suitability and cleanliness. He indicates the dangers of tight clothing, of garments made of inflammable material and the evils arising from improperly fitting footwear. Attention is called to the necessity for a proper care of the teeth, and it is declared that errors of vision and the causes of deafness are two very important subjects for the consideration of school physicians.

The teaching of school hygiene, though of recent origin, is recognized as of paramount importance in the up-building of a better citizen physically. In all the progressive countries of Europe and in the larger cities in this country, a service of school doctors is being established. The movement began in Boston in 1894, when some fifty medical examiners were appointed to inspect the schools and pupils in that city. Three years later the work was taken up in New York City, and to-day the work of schol inspection is extending all over the United States and Canada.

The Hoarding of Eggs.

The recent crusade conducted against the merchandizing of "rots and spots" has revived the old question as to why it seems necessary for business purposes to store or hoard eggs for months, even years, be-

fore eating, instead of placing them on the market in a fresh laid condition. The *Spatula*, a magazine devoted to commercial interests, in an article dealing with scientific facts about eggs, offers in explanation the assertion that farmers and grocers hold eggs so long in the summer for better prices that "fresh eggs direct from the farm" from August to December are the exception. They come direct, but are far from fresh. They are not held in cold storage. Most of these are classed by the trade as shrunken eggs.

The egg, when laid, is virtually germ free. Seldom has it any bacteria. The egg shell is sufficiently porous to admit germs after the egg has been dropped. The fibre-criss-crossed membrane is germ proof when kept dry. Eggs may be affected by moisture in many ways, when the egg-rotting bacteria may be deposited and interred. The following are the chief classes of egg-rotting bacteria:

1. Black Rots—It is probable that many different species of bacteria cause this form of rotten eggs The prominent feature is the formation of hydrogen-sulphide gas, which blackens the contents of the egg, giving the characteristic rotten egg smell and sometimes causing the equally well known explosion.

2. Sour Eggs or White Rots—These eggs have a characteristic sour smell. The contents become watery, the yolk and the white mixed, and the whole egg offensive to both eye and nose.

3. The Spot Rot—In this case the bacterial growth has not contaminated the entire egg, but has remained near the point of entrance. Such eggs when broken show lumpy adhesions on the inside of the shell. These lumps are of various colors and appearances. It is probable that spot rots are caused as much by mould as by bacteria, but for practical purposes the distinction is immaterial. The responsibility for decayed eggs is chiefly with the farmer.

There are mouldy eggs, caused by wetting the cases, damp cellars or the sweat of ice boxes. These usually are afflicted with the spot rot. The musty egg is free from organisms.

Eggs should never be stored in musty cellars, or in rooms with citrus fruits, vegetables, fish or cheese. The egg takes on the odor of those products.

Eggs are naturally worth more, intrinsically, when laid than when they reach the consumer. If marketed as laid, the eater of low grade eggs would eat real fresh eggs, but pay a higher price for them. This would probably force him to substitute other food for his egg diet.

The eggs are gathered by the farmer with varying regularity and are taken, perhaps on the average of once a week, to the local village merchant. This merchant receives weekly quotations from a number of surrounding egg buyers, and at intervals of from two days to two weeks ships his eggs by local freight to such dealers. The dealer buys the eggs "case count", that is, he pays for them by the case, regardless of the quality. He usually repacks the eggs in new cases and may or may not candle them.

This dealer, in turn, receives quotations from city egg houses and sells the eggs by wire. He usually ships in car load lots. The city receiver may also be a jobber who sells to grocers, or he may sell the car load outright to a jobbing house. The jobber recandles the eggs, sorting them into a number of grades, which are sold to various classes of trade.

The jobber grades the eggs as the trade demands. In New York there are as many as seven or eight grades. The finest are packed in sealed cartons. The first class hotels, clubs, restaurants and soda fountains buy the strictly high-grade eggs. The elements of cost for a dozen eggs purchased in New York for 25 cents run about as follows: Paid the farmer, 15 cents; profit to shipper, ¾ cent; freight to New York, 1½ cents; gross profit of receiver, ½ cent. gross profit of jobber, 1¼ cents; loss from candling, 2 cents; gross profit of retailer, 4 cents. Total, 25 cents. Any increase along the cost line increases price to consumer.

The fact remains that farmers' eggs, whether shipped direct to the consumer or to the merchant, may not be fresh in any sense. They may have lain in the sun or other heat days after having been laid, or may have been kept under unfavorable conditions, until enough were gathered for the market.

School Inspection.

Naturally enough, the innovation of medical inspection in the public schools has provoked considerable opposition on

the part of the parents of children subjected to examination. The parents are apt to contend, not without measurable justification, that, in requiring children in the schools to submit to examinations the expediency of which is questioned at home, the school authorities exceed their powers and trespass upon the rights of individuals. Commenting on this, the *Journal of the American Medical Association*, while assuming that the examinations in question are legitimate, expresses the opinion that it would be well for those engaged in the work to remember that "medical school inspection is at present on trial so far as the general public is concerned, and that lack of tact may prejudice the cause as much as lack of skill, if not more." As a matter of fact, the vital question involved is as to the right of the powers controlling the schools to compel children to submit to an inspection which no power can compel in their homes. It is a matter of surprise that this point has not yet been brought to an issue in the courts. It certainly needs to be, in order that all misunderstanding as to the scope of the authority exercised may be removed and the validity of the system of medical inspection so determined that there will be an end of misgivings and mutiny.

Goitre in Canada.

Dr. Andrew Macphail writes in the *Canadian Medical Association Journal* that some years ago Dr. G. A. Charlton, Provincial Bacteriologist at Regina, spent a summer bicycling over the Island of Montreal, making an unofficial census of the villages in respect to the incidence of goitre. He gained some most suggestive results, says Dr. Macphail, which were duly published at the time. He found that goitre was absent along the shores of the island, and wherever the inhabitants obtained their water from the St. Lawrence or Ottawa Rivers, while it was common in the more centrally situated villages. But here again a distinction was to be made out. Only where water was obtained from shallow surface wells, in sandy soil, did goitre prevail; in villages, where the wells were deeper and in the glacial clay it might be entirely absent. It was not therefore, the underlying silurian rock that was the essential factor, although, curiously enough, goitre throughout the world is apt to show itself over limestone formations. But something further is necessary, something presumably of organic nature, it being well established that the water of shallow wells is richer in organic matter than is that of deep. These views are supported by the earlier observations of Kocher, that in Switzerland goitre waters are distinguished by their relative abundance of bacteria. Ewald had found that by changing the water supply of one of the villages in the Aar valley in Switzerland, the percentage of goitre among the school children was, in the course of ten years, reduced from fifty-eight to eleven per cent. Dr. Charlton gives a similar instance from the village of Pointe aux Trembles, where goitre, previously prevalent, has disappeared since the water has been piped into the houses from the St. Lawrence.

Along these lines Lustig and Carle in the nineties would seem to have obtained some results by feeding the lower animals with water from goitrous districts, but their results have not been satisfactorily confirmed. Now, the convincing demonstration comes from Cashmere. Two years ago Dr. McCarrison, of the Indian Medical Service, announced to the Royal Society that of thirteen healthy individuals who had taken the suspended matter removed by filtration from known goitrous waters at Gilgit, he himself and three others developed enlargement of the thyroid, which showed itself in from thirteen to fifteen days. In the February number of the "Proceedings" of the same society he gives a further communication, in which he shows that of 23 individuals previously unaffected, given each morning, for from 30 to 55 days, a drink of the suspended matter filtered from goitrous water, six showed enlargement of the thyroid persisting during the course of the experiment, while three others suffered from thyroid hypertrophy of a transitory character.

It is difficult to imagine that a causative agent which is removed by filtration and destroyed by boiling can be of any other than a microbic nature, and in support of this view that we deal with an organism which becomes parasitic in the alimentary canal, Dr. McCarrison gives photographs

of a goitrous youth before and after treatment by the bacillus bulgaricus. The world seems getting very small when the latest fashionable method of employing Satan to drive out Beelzebub is being used upon the natives of Cashmere. It will be interesting to observe what results others obtain by similar treatment.

That there is an intimate association between intestinal disturbances and disorders of the thyroid has been maintained for years before a somewhat heedless public by Dr. W. H. Thomson, of New York. But if this goitre, or, more accurately, diffuse enlargement of the thyroid, is of microbic causation it would seem evident that we do not deal with an ordinary infection or a direct presence of the microbes within the thyroid, and that because we have abundant evidence that early goitres disappear when the affected individual removes to a non-goitrous region. It would seem that we deal rather with some intestinal saprophyte derived from the water, whose toxins, absorbed in the alimentary canal and circulating in the blood, have a specific action upon the thyroid gland. When the patient is removed to another region and gains there a new intestinal flora, or faunathen, these toxic substances being no longer produced, the organ returns to its normal state.

Yet other observations of no small interest have been made during the past year by the state boards of fisheries in New York and Pennsylvania upon the goitrous tumors of fresh water trout. The development of these tumors in the hatcheries has become extraordinarily widespread, and, what is more, as first shown by Plehn, in 1902, in Bavaria, these tumors may eventually infiltrate the surrounding tissue and take on definite, cancerous characters. But in the early stages we deal with merely a simple hypertrophy of the gland. It has been shown very clearly by Marine, that here again the water is to blame. In making a hatchery some clear brook is chosen and its water passes through a series of tanks containing the fry. The disease does not show itself in the upper tanks in which the water is fresh, but becomes progressively more and more marked in the lower tanks. Here with fish we find parallel phenomena: the condition does not show itself where abundant fresh water is afforded, and when the affected fresh fish are transferred to other and healthy brooks the tumors disappear. Evidently we deal with a very interesting border-line condition between simple, functional enlargement and tumor formation.

The Strange Side and Dangers of Expectoration.

The general public do not like, as a rule, to be compelled to refrain from habits which have been acquired, and become customary, even though it is stated that the repression of such practices is beneficial to health. James Scott in *The Sanitary Record*, points out that in the matter of spitting (or to give it its more refined appellation, expectoration) many people fancy that the action of the authorities against the continual pollution of thoroughfares, places of worship and amusement, and municipal conveyances, is simply the result of a faddist idea, based on panic concerning the possibilities of germs. They lose sight, even when confronted with incontestable evidence in support of the assertion, that the whole world is practically governed by its minute atoms.

We know, he says, that the biggest animals, the tallest trees, and the largest of all natural objects, are built up of microscopic cells, each cell originating from a central nucleus of unfathomable mystery. By inoculating a few of these living cells with other and antagonistic items — such as fungi spores — we can start a course of wholesale destruction which may finish with the complete decay of either creature or plant.

The greatest rock or mountain is a compound of atoms, resolvable by means of water, heat, cold, acids, and alkalies, into dust, revealing to a certain extent its separate minute factors. Water of any quantity — a ton, gallon, or pint, say — standing still for sufficiently long a time evaporates; or, in other words, is converted into its original gaseous form, which will, however, recombine to again make water. I refer to these things to show the importance of the minute portions of substance, and their correspondingly minute actions. Tiny things, by tiny efforts, create magnitude.

Coming back to our particular subject, it cannot be too strongly emphasized that

the authorities who are responsible for the attempts to stamp out the widespread and seemingly harmless vice of spitting, are doing the best for the prevention of disease. Sanitarians and medical men are fully alive to the pernicious effects of the minute bacteria and bacilli — the germs, as

Fig. 1.—The outer circle is a magnified pin-hole. The inner one is a globule of saliva (caught on glass) just as it was spat out with millions of others. The eight white objects are transparent flakes, or cells, of *epithelium*—mucous skin.

the man in the street calls them — of infectious and contagious maladies; and I suppose that it is simply ignorance that causes other persons to rebel against injunctions formulated for the direct benefit of the public.

To spit from the top of a tramcar into the roadway seems so trivial a matter to many men that they call another a crank who objects to the habit; yet if such defilers could see the actual result of this spitting they would be amazed. Stand in a sunbeam, facing the fiery orb, and then spit. Note the millions of specks of saliva that rush along and fall as a shower of spray. Out in the highway a multitude of this kind gets scattered far and wide by the air currents, and the particles may lodge on a hundred pedestrians. In the case of a person suffering from tuberculosis, or some other microbic complaint, try to imagine the havoc he could commit by spitting once only. The practice would be almost equal to manslaughter.

To thoroughly test this subject I sat in the chair by my work table at about 4 feet from the fire-place, into which I spat a few times. While doing so I held a microscopical glass slide in the path of the careering saliva. The result was that several of the floating specks, which are evidently ejected by the force of the movement as tiny spheres of moisture, fell on the glass and were thus conveniently placed for examination. By the way, when a pinch of gunpowder is exploded — it can be tested on glass — multitudes of minute perfect spheres are created. Every grain of the powder is several times larger than these balls into which the material becomes instantaneously converted. It is the same with a bursting soap bubble — the scattering spray consists of hosts of water spheres. Rain drops from homogeneous clouds, bullets made from molten lead falling down inside high towers — these are other and larger examples of rotundity being produced owing to the passage of substances through the air.

By running the slide under the compound microscope we see that each drop of saliva from an expectoration lays as a

Fig. 2.—The globule shown in Fig. 1 is here depicted a few moments after being captured. As the water evaporates from it the salts spring into view as a delicate filigree and the *epithelium* cells wrinkle and curl up, or go, "frizzy."

disc of fluid in which floats a number of nearly transparent, loose scales, each, as a rule, having what appears to be a core in its centre. This is a nucleus, and is the atom whence the scale — or epithelium cell, as it is called — grows or "sprouts" (see No. 1). I will return to this phase again.

Around these scales may be seen several corpuscles, germs, and indefinable specks. At first the objects are so faint and transparent that blacklead pencil marks would be too dark to represent them. In a little while, however, the contours of the scales become more sharply defined, while the in-

Fig. 3.—A magnified pin-hole view of a drop of saliva, flakes or cells of *epithelium*, and groups of corpuscular substance. The tiniest dots represent *bacteria* and *bacilli*.

terior area of each one wrinkles curiously after having become densely speckled. Various items in the surroundings also become clearer, as the watery part of the drop evaporates away.

Within a few moments from the time of spitting, the captured specks have sunk into little white discs, not unlike those made by house flies on mirrors, etc. Each dot is traversed by beautifully arranged lines and points of white substance, as in No. 2, evidently the salts of the fluid. Sometimes the drop will become entirely covered with this rather elegant filigree, which then obliterates the scales and corpuscles.

The scales are flakes of epithelium, and correspond with the scurfy particles that wear off the outer skin—the epidermis. Rubbing one's head hair will often dislodge a shower of such scurf. Epithelium scales retain their shapes intact, because they are bathed in the slimy substances which is the chief component of the mucous membrane, or soft skin lining the mouth and other portions of the alimentary canal. These scales are quite flat, though they are derived from the globular cells of the under skin. Originally the latter cells are more fleshy, and each has an exactly central nucleus. As the outer layers of the mouth wear away, the under layers rise, and those lower still do likewise. The consequence is that the globular cells are pushed higher by stages, getting flatter and flatter meantime, until they finally appear as loose flakes in the mucous membrane, where they overlap one another, and are as flat proportionately as any of the leaves of this journal are when the thickness is compared with the whole page. The developing cells are called squamous epithelium. The substance of these scales is the basis, after suitable modification, of the hair, nails, teeth, enamel, and eye lens.

To enable the reader to properly realize the significance of the subject, I show in No. 3 a portion of a drop of saliva deposited on a slide without being spat out. Bubbles of air are a notable feature of it, as are also clusters or individual specimens of corpuscles. All these features display their influence in various ways. Warm this saliva gently, and the result

Fig. 4.—A magnified pin-hole, showing a drop of saliva as it appears after being gently warmed. The "lernery" due to the salts crystallising. The cubes indicate chloride of sodium, or table salt.

is that the bubbles burst, and the whole film dries to a white film, in which the mineral constituents get arranged as a rather pretty lacework, of the kind shown in No. 4. The lines may be infinitesimally fine or comparatively bold, but in any case they would represent a colony of mi-

crobes the equivalent of a meadow to a herd of cows or a flock of sheep, and would doubtless serve the similar purpose of providing them with nutriment.

Remember that there are myriads of particles of spray in a single expectoration and that one of these particles or drops carries several scales, and then note the following facts:—A tuberculosis bacillus is a transparent, round-ended rod or closed tube, generally holding a few spores or reproductive factors, and averages a quarter, or half, the diameter of a red blood corpuscle, the latter averaging 1/3200 inch. The white corpuscles are about 1/2500 inch across. Now, an epithelium scale is 1/300 inch, or thereabouts,

Fig. 5.—A couple of epithelium cells, or flakes, from saliva, on which are shown some stained *tuberculosis bacilli*. These are depicted in approximate proportions. The cells vary in size among themselves—enormously magnified.

broad, so that one would be quite a good raft for a group of microbes. Miniature and destructive aeroplanes would, perhaps, be a better description. We worry about man-invasion by this means, yet take too little notice of the armies of epithelium scales floating in the air, and really more destructive to us than soldiers would be.

An idea of the matter is conveyed in No. 5. Perfectly accurate delineations are almost impossible, because even minuteness has its differences; and a lot of specks which to the naked eye all seem uniform in size would vary among themselves, as disclosed on magnification, as much as a sackful of potatoes does among its contents.

What a contrast there is between millions of inhabitants being allowed to scatter every minute of the day their hordes of saliva spheres into the air, and the same people compelled to take other measures with respect to the practice!

I have referred only to ordinary spitting. In cases where phlegm containing dead lung cell *debris* was coughed up and indiscriminately ejected by a consumptive, the thought of possible pollution of his surroundings is extremely repellent.

The Frequency of Cancer.

Some statistics regarding the frequency of cancer have been published by Dr. Jacques Bertillon, head of the Statistical Department of the Ville de Paris. He states that cancer is more common in towns than in the country, and shows an evident preference for the colder regions. Comparing the statistics furnished by foreign countries, Dr. Bertillon says that northern lands show a much higher percentage. Thus for 100,000 inhabitants there were 101 deaths in the Netherlands, 100 in Norway, and 91 in England, while in the centre of Europe the proportion falls considerably, Austria numbering 78, France 76, and Prussia 71, and gradually diminishes as the Mediterranean is approached, Italy showing 61 deaths, Spain 48, and Hungary 42. Dr. Bertillon further states that the frequency of cancer is on the increase, and that in 1908 there were 30,124 deaths from the disease in France and in 1909, 34,053 in England.

Relatives of Infantile Paralysis.

Studies recently made by C. Levaditi, chief of the research laboratory of the Pasteur Institute in Paris, have had consideration of the latest work in infantile paralysis. The conclusions reached are that there exists a striking analogy between this disease and hydrophobia, of which Wickman has already spoken. These resemblances lie in part in the filtrability of the virus, its progress along nerves, its relations to the central nervous system, and the resemblance of histological and pathological alterations. "Poliomyelitis can be considered a kind of hydrophobia infection," writes Dr. Levaditi, "only different from the latter by its specific pathogenity for men and monkeys and by some other sec-

ondary characters. There are differences and the diseases are of different origins, since monkeys, immune to infantile paralysis, may contract hydrophobia." Dr. Levaditi notes that the mode of contagion and the suggestions for prophylaxis thus far are based on the assumption that it is a virus of the nasal-pharyngeal mucous membrane and that it can penetrate an organism to infect it by the respiratory tract as well as by the digestive. For prophylaxis, isolate first cases and prevent all contact with them, direct or indirect. Secure rigorous antisepsis of the nasal mucous membrane and back of throat, for which hydrogen peroxide is suitable. Serum to-day seems to be of use only in diagnosis of the disease and the discovery of the aborted forms.

As a note along the line of present investigation in this country, Dr. Samuel G Dixon, State Health Commissioner of Pennsylvania, notes the observation of an organism in the blood from acute cases of poliomyelitis in humans and also from monkeys. "This," Dr. Dixon writes, "is different in morphological characters from any hitherto described, which may or may not on further investigation prove to be the etiological factor in the causation of the disease." When treated with carbolthionin the organism appears as a faintly stained blue rod with regular cell-wall about ten microns long and one-eigtieth as wide, curved at an angle of sixty to seventy-five degrees at one, sometimes at both ends. At times the curved end is bulbous. The organisms do not take the Gram stain. Bloods from ten cases of children and from thirteen monkeys were examined, and, as a standard, three smears from humans and from thirteen normal monkeys were examined with negative results. These monkeys were afterwards inoculated and were the group yielding the organism. It was not found in the brains or cords of paralyzed monkeys; but from blood treated in different ways, defibrinated, and in cultures, there were increased numbers. No moving organisms have been detected in fresh blood, and success has not yet been attained in isolating the organism.

Experiments were made at the Pennsylvania State Laboratory last year with Ehrlich's salvarsan as a prophylactic and a curative agent, but neither at the time of inoculation with the poliomyelitis nor subsequently did the drug seem to protect the monkey from the disease or lengthen the time of its incubation.

How to Make a Hygrometer.

While it is comparaticely an easy matter to provide means of moistening our indoor air, it has not been so easy to determine the degree of humidity. That is, to tell whether the air is too dry or too moist. This is determined by an instrument called a hygrometer. An instrument of this kind that is thoroughly accurate can be made by using the following formula:

Cobalt chloride	5 drams
Sodium chloride	150 grains
Calcium chloride	40 grains
Gum arabic	80 grains
Water	2 ounces

Dissolve carefully and then soak thin, white muslin in the solution and wring dry; when dry cut into strips for use and hang up in rooms where indications are desired. The muslin strips when dry are blue; when moist they are pink or red. If the air in your room contains 70 per cent, humidity, the muslin indicator, prepared as directed, would show pink. If there be only 60 per cent. or less, the color will be blue. If the strip assumes a grayish color, inclining to pink, it would indicate a temperature ranging from 68 to 72 degrees, with a normal and, therefore, healthful degree of humidity in the air.

There is an economic as well as a healthful side to the matter of having the proper degree of moisture in our indoor air. It is a well known fact that a room is more comfortable at a temperature of 68 degrees and a relative humidity of 65 per cent. than it is at a temperature of 72 degrees and a relative humidity of only 30 per cent. In fact, it has been determined that as a rule indoor air contains far too little moisture, probably 40 per cent. less than that found out of doors.

Open Mail

Evils of Dry Sweeping.

To the Editor of The Public Health Journal, State Medicine and Sanitary Review:

Sir:—Sanitation lies in the air. Daily papers print articles on health, city authorities dwell upon the insanitary drinking cups, and health departments are conspicuous in issuing bulletins. The majority of physicians everywhere agree that the great disseminator of disease, the most effective producer of tuberculosis and other infections, is dust.

The ground-up filth, laden with millions of germs of every variety of disease, is swallowed and breathed by the unfortunate persons who are compelled to live in a city where the rudiments of hygiene are left unnoticed.

Why is it that the powers that are beating the drums in collecting funds in order to fight consumption do not bend every energy at their disposal to first do away with the real cause of disease, dry sweeping? Why do cities allow a band of stupid broompushers to stir up clouds of dust which settles upon everything within many yards? Why do authorities permit such farces as fund collections to fight the white plague, and other time and money robbing health measures, so-called, to be enacted, when right before their very doors, dry sweeping is causing more harm in one day than one year of bacteriological work can do good? What do the people care whether laboratory tests reveal a million or more germs in a certain food as long as they have to eat filth, nolens volens? Why not get at the root of the evil? Why not do as every civilized nation should do? Stop dry sweeping at all costs?

Why not stop spitting and impose fines upon violators of this law; and if, as is often the case, an officer is seen to spit in cars or upon sidewalks, make his fine double of what it would be for the private citizen? Enforce these ordinances, not spasmodically, but daily, all the time, year in and year out. Collect the fines and use them to make our towns less filthy.

W. H.

"Tent Life" for the Consumptive.

Sir:—You have asked me to give my opinion and experience of "Tent life" for the consumptive. To be brief, let me say: I have been giving consumption careful study and thought for the past thirty years, and have watched and tried the different forms of treatment, and have come to the conclusion that it is practically useless to attempt the treatment of a case of tuberculosis under a roof that prevents the patient from getting all the sunlight there is. I believe that most cases of consumption are curable under proper hygienic conditions — in the open air and sunshine, but they seldom recover in the ordinary house. When I cannot get patients to go into a tent and stay there, where they can get all the sunshine and fresh air, I decline to take charge of them.

We know that tubercle bacilli will live in a darkened place, in fabrics, carpets, under wall paper, in the crevices of a room, adhere to the woodwork, etc., and we know that a few moments of the heat of boiling water or a short exposure to the direct rays of the sun will kill them, hence a patient in a close room in a house is necessarily reinfecting himself, not only suffering from the tubercle bacilli in the body, but reinfecting himself with every breath, while in the open tent in the full blaze of sunlight, the bacilli are destroyed, he gets pure air, and he has only to contend with the bacilli developed within the body. In this way half the battle is won, more, the danger to nurse and friends is reduced to a minimum, while in a house it is as contagious and more dangerous than smallpox or diphtheria, though slower in its work. In this way it may go through whole families, by contagion from the sick one, or from infected rooms.

It is not hereditary, though there have been instances where the bacilli were found in the new born, but the cases are so rare that it can be classed as not hereditary. The great danger is contact with those affected, inhaling infected air, and in our food supply, and the most potent factor in its treatment is sunlight. It has been said

on good authority that the sun's rays can be concentrated on a part sufficient to take a skyagraph of the part. Who can tell how deeply into the tissues they will penetrate to kill tubercle bacilli?

The form of tent I have found most convenient for treatment of consumption, or in fact, many other diseases, is the square or oblong tent. It is made by driving four posts, of two or three inches in diameter, into the ground, say eight feet apart at the head and foot, and ten feet from head to foot, thus making a frame 8 x 10 feet. The two posts for head of tent to be 7½ feet from surface of ground to top of post, and the posts at the foot to be 5 feet, giving a pitch to the roof of 2½ feet in ten. Put small poles or joists on top of the posts for plates, and brace the sides by running a small brace from the top of one post to foot of another. Now cover the top with 8 ounce duck or canvas, and the walls with factory cotton. Let the cover for the roof come down over the foot about 15 inches, and tie it there with cords to the posts. This is for ventilation, and gives an opening of 15 inches by the width of ten, and with the door in front you have a good draft going through the tent above and away from your patient. Cover the floor of the tent with six inches of spruce or fir boughs. This not only prevents the dust from rising, but fills the tent with a balsamic odor that is refreshing to patient and attendants. This can be renewed every two weeks. In this sort of tent you have all the room you want to care for your patient, and it is well ventilated, and there is no flapping of its walls when the wind blows, while with a pitched roofed tent, there is no room to work, the walls are always flapping when the wind blows, and they cannot be ventilated properly, and they are expensive, while the square tent has the advantage of being cheap. For a tent 8 x 10, the cost of material should only be from four to five dollars, which is within the reach of most people. I have never had any success with a pitched roofed tent. They are too hot in the day time, and the breeze makes them flap and disturb the patient from sleep.

Patients do better in tents in the winter than in summer. The colder the weather, and the brighter the sunshine the better they do. They get more oxygen at a low temperature than at a high one, and that is the thing wanted, and the cold air seems to stimulate the appetite and acts as a general tonic. I find it is sometimes difficult to get a patient into a tent, but when once in a suitable tent for a few days, they do not care to return to the house; they breathe so much freer and more easily, and sleep so much better in the open air, as it really is, in a tent.

For a winter tent I have one made about one foot larger all around, than the summer tent, except at the head, and that is made two feet longer. This is put over the summer tent, the door in it is in the opposite corner from where it is in the inside tent, so there will be no draft. By making the tent two feet longer at the head, it makes a walk between the door of the inner and outer tent.

I have had patients go into tents in hot weather and kept them there all through the winter, and have taken them out of hot rooms in winter, with a zero temperature outside, and put them in tents and had them gain very satisfactorily, one patient gaining 14 pounds in seven weeks; whose sputum was heavily loaded with bacilli on going in, but was completely free from them in three months.

Do not educate the people or patient, as the profession has done in the past, that there is no hope for the consumptive. It is a mistake. Dr. A. VanBneden, of Belgium, says: "Consumption can be permanently cured. Over 75 per cent. of the cases treated at the Bourgoument Sanatorium have continued four years after treatment to improve, and are in a condition to return to the irregular occupations." The German army, by making a campaign against it, has reduced the mortality 40 per cent. in three years. The post office employees of France have reduced it 50 per cent. in three years.

Do not educate the people that sunshine, pure air and food is the whole treatment. I know of no disease that requires more watchful care on the part of the painstaking physician than consumption, and none in which he can do so much for the afflicted. The patient must be put in proper hygienic surroundings, in a tent or glass-roofed room, with plenty of ventilation, and every organ of the body carefully watched to keep them up to standard.

If we would stamp out consumption, which can be done, we must isolate every

case, and watch the food supply, and see that no tuberculosis is present in the cattle that supply us with beef, milk, etc. In this way we can soon get control of it. A tent colony should be established in every municipality for patients who could not be treated at home. It would cost but little, and would prevent the spread of the disease.

As to medical treatment, every case is a law unto itself. A physician has no right to think, because the patient has consumption, that there is nothing to be done but stand idly by and see the patient fade away. He should take hold of the case and treat it to win. Place under proper conditions, assist the weakened organs, regulate the diet, forced feed, baths when necessary, massage, regulating the exercise, etc. It is the minutiæ in the treatment of consumption that wins the battle.

I had a number of interesting cases treated along the above lines some four, five and six years ago, all enjoying good health to-day, which proves to me that we need not send our consumptives away from home to be cured.

S. N. MILLER, M.D.

Warring Against Tuberculosis.

Sir:—If every tuberculous rich man could be brought to realize the fact that his disease, in addition to being infectious, was preventable, that in all probability his infection may have come from some tuberculous poor person, and that the problem of preventing the infection in his children and of others is closely connected with the care, treatment and supervision of the tuberculous poor, a great stride will be made in securing the sinews of war for the battle against tuberculosis. For the necessities of this war are mainly dependent upon a liberal supply of money for many purposes.

Further original investigations are necessary, and for this purpose money must be spent in the endowment and support of institutions The poor consumptive should be taken care of, so that he will no longer be a menace to the welfare of the community. To provide for the care of those who are no longer capable of supporting themselves, but who may yet live years; to give employment to those who have arrested tuberculosis, but remain infective and will do so for a long time; to return the so-called "cured" cases to usefulness and activity in life, although they may have a diminished earning power; to promote educational propaganda, to advance measures for public recognition and control of the disease—all these are measures that should appeal with the utmost force to men of great wealth, broad culture and high purpose, especially if the wealthy man has in himself or some member of his family a personal object lesson.

Our wealthy men have here a problem to the prompt and proper solution of which they might well turn every atom of their energies and every dollar of their immense wealth.

If in the gospel of wealth there is no doctrine of helpfulness to our fellow men, so much the worse for its disciples. For the touch of the infection upon the pauper to-day is upon the merchant prince or his loved ones to-morrow. In the protecting of the community from its ravages he is ultimately protecting those who are more to him than his millions.

It is the plain duty of our rich men to see that research laboratories are properly endowed and the working scientists properly paid. If love for humanity does not furnish a sufficiently potent argument, selfishness should do so.

W. A., M.D.

Meetings and Reports

DOMESTIC

The Canadian Medical Association.

The following programme has been arranged for the annual meeting of the Canadian Medical Association in Montreal on the 7th, 8th and 9th of this month:

First Day, June 7th, Wednesday.

9 a.m.—Registration, payment of fees, and meeting of executive council.

10.30 a.m.—General meeting; installation of president. (1) Calling meeting to order by president. (2) Prayer designated by the president. (3) Address of welcome and response. (4) Report of chairman of committee on arrangements. (5) Reading of minutes of last general session. (6) Report of general secretary of last general meeting. (7) Election of the Association's members to the executive council. (8) Meeting of executive council.

1 p.m.—Luncheon in new medical building.

7 p.m.—Sections of medicine, surgery, obstetrics and gynæcology, laboratory workers, ophthalmology and oto-laryngology, preventive medicine.

9 p.m.—Smoker in the Victoria Rifles Armory.

Second Day, June 8th, Thursday.

9 a.m.—Meetings of sections.

1 p.m.—Luncheon.

2 p.m.—Combined sections: (1) President's address; (2) Address in surgery, Alex. Primrose, Toronto; (3) Paper, W. J. Mayo, Rochester, Minn.

8.30 p.m.—Address in Medicine, in the Royal Victoria College, Sir James Barr. Liverpool.

Third Day, June 9th, Friday.

9 a.m.—Meetings of sections.

1 p.m.—Luncheon.

2 p.m.—Sections.

3.30 p.m.—Visit to McDonald Agricultural College, at Ste. Anne.

The usual arrangements for tickets have been made, members intending to be present purchasing a one-way, first-class ticket to Montreal, at the same time securing a standard certificate of such purchase signed by the ticket agent. These certificates must also be signed by a special agent who will be in attendance in the administrative building set apart by McGill on June 8th. Return tickets will be issued only to those who have the standard certificate signed by the ticket agent, countersigned by the secretary of the meeting, and also by the special agent on June 8th, as follows: if forty-nine are present, at two-thirds of one-way, first-class fare; if fifty to two hundred and nine-nine are present, at one-third fare; if three hundred or more, no charge will be made.

The Canadian Pacific Railway Centre of the St. John Ambulance Association.

The following are the excellent rules of the Canadian Pacific Railway Centre of the St. John Ambulance Association:

1. The object in creating this centre is to form local branches at points on the company's system, having members who are qualified to render first aid, and trained in ambulance drill, willing to be placed at the disposal of the Canadian Pacific Railway Company as a supplement to the services of a doctor.

2. The organization of the St. John Ambulance Association on the lines of the Canadian Pacific Railway will consist of a Centre with headquarters at Montreal for the entire road, and a branch centre with headquarters at Winnipeg for western lines, and local branches.

3. Application for formation of local branches should be made through foremen or other officials to the general superintendent, who will notify the general secretary (or assistant general secretary if on western lines), giving name of proposed local secretary who, if approved by

The Editor trusts that all medical officers of health and school medical officers will remember to forward copies of their reports to The Public Health Journal, 13 Victoria St., Toronto, Ontario, as soon as published.

the general secretary, will hold office until changed.

4. On the formation of a branch centre, one or more classes may be formed on that centre, each class to consist of not less than ten members or more than thirty members over the age of 18 years, willing to become enrolled for ambulance instruction, and should preferably be first established among employees attached to wrecking crews and in division shops. The centres may be of any size and include all classes of employees willing to attend. The classes should number as near thirty members as possible in order to minimize the cost of instruction, and on the formation of a class the general secretary, or assistant general secretary, will arrange for the appointment of a lecturer, on eastern and western lines respectively. The expense of the lecturers will be paid by the railway company and charged to account No.... "Injuries to Persons," at points where classes are formed. The general secretary or assistant general secretary will supply the necessary stationery, triangular bandages, etc., for the use of the classes.

5. The course consists of five lectures by a medical practitioner, with an interval of not less than one week between each lecture. The lecture to last one hour, an additional half hour to be devoted to practical work, such as bandaging, application of splints, etc., including ambulance drill by a qualified ambulance man. The examination will take place as soon as convenient after the last lecture. Branch secretaries will furnish a list of candidates to the general secretary, or assistant general secretary, who will make arrangements for examination by an examiner appointed by the company's chief doctor. Two rooms should, if possible, be provided for examination purposes, to enable the examiner to prevent candidates seeing or hearing the oral or practical examination of others. The lecturer and branch secretary, under the rules of the association, are not allowed to be present in the room where classes are held, and examiners are responsible for seeing that this rule is adhered to. The general secretary, or assistant general secretary, will provide examiners with a copy of the rules for their guidance.

6. Candidates must attend not less than four out of the five lectures to enable them to sit for examination. No candidate who has failed shall be allowed to present himself for a second examination on the subjects in which he has failed before he has attended a fresh course of lectures.

7. Candidates will be examined in the following subjects:—

The neat and quick application of the triangular bandage to any part of the body.

The various methods of arresting hemorrhage.

The first-aid treatment of any fracture or dislocation.

Restoring of the apparently drowned or otherwise suffocated.

8. Candidates who pass in the earlier or practical parts of this examination will receive a certificate. At intervals of one year or more (at times when examinations are held), candidates may present themselves for re-examination as follows:

Voucher. Where candidate has previously passed for a certificate.

Medallion. Where the candidate holds both certificate and voucher.

Label. Where the candidate holds a medallion.

In addition to the above, a qualification badge is given by the company to be worn on the front of the coat or waistcoat, showing that the wearer is able to render first aid, and as a means of identification.

9. The standard for the examination for certificate, voucher, etc., is specified on the examination paper and must be strictly adhered to.

10. Vouchers for second examination, and medallions and labels for third and fourth examinations respectively, will be issued by the general secretary on receipt of report of the examiner.

11. The assistant general secretary, and local branch secretaries, will be responsible to the general secretary for seeing that the syllabus and rules of the association are adhered to.

12. Branch secretaries will furnish the general secretary, or assistant general secretary if on western lines, with copy of form 295 for each accident at which first aid was rendered, giving name of man rendering assistance and how injury was treated.

13. Class expenses must not be incurred without first obtaining authority from general secretary, or assistant general secre-

tary if on western lines.

14. Expenses of lecturers and examiners, including fees and incidental expenses for travelling, will be paid by the Canadian Pacific Railway Company and charged to account No. ...., "Injuries to Persons," at points where classes are formed.

15. Assistant general secretary, and branch secretaries on eastern lines, will obtain and send to the general secretary a monthly statement showing expenses incurred as charged by the accounting department.

16. Class expenses and requisitions for ambulance supplies required by branches must be approved by the general secretary, or assistant general secretary if on western lines, before being supplied through the company's stores or taken into the company's accounts.

Alberta Educational Association.

At the recent annual convention of the Alberta Educational Association in Edmonton, it was resolved to request the Attorney-General and the Minister of Education to use their influence and do their utmost to have a better enforcement of the law prohibiting the sale of cigarettes to boys.

It was also resolved to ask the Department of Education to encourage school gardens by means of special grants, and to make a systematic attempt to furnish practical instruction in the establishment and maintenance of the gardens. And the suggestion was made in another resolution, that there is a growing importance and need for commercial and technical education in the province; the opinion of the convention being that departments such as commercial, manual training, domestic science, electricity, draughting, and so on, be recognized and encouraged by the Department of Education. Wherever the school board deems it urgent to have such facilities, the teachers hope the board will be assisted to get them by the Department of Education.

President Tory, of the University of Alberta, was elected president of the Alberta Educational Association for the coming year. First Vice-President is W. C. Carpenter, of Calgary; Second Vice-President, J. McCaig, of Edmonton; Secretary and Treasurer, N. E. Carruthers, re-elected.

Canadian Association for the Prevention of Tuberculosis.

No better statement of the results accruing from the fight being waged against tuberculosis could be given than those outlined in the report presented by Dr. George D. Porter, secretary of the Canadian Association for the Prevention of Tuberculosis at the May meeting in London, Ont.

This tells of the awakening interest in the fight being taken by the western provinces. It speaks of the sanitaria and the lowering death rate, which has resulted from proper treatment, and shows that funds are everywhere being raised to combat the disease.

"As will be seen by the perusal of the various reports embodied in our annual report," said Dr. Porter, "much work in the campaign against tuberculosis has been done throughout Canada during the last year.

"Direct reports from nine provinces show that the efforts put forth have increased in nearly all of them.

"In British Columbia the splendid new sanatorium at Tranquille, accommodating 60 incipient cases and over 40 advanced, was formally opened this year. Only those engaged in the arduous task of interesting the public and the Governments sufficiently to raise the necessary funds for such a purpose can form any idea of the labor involved, and the British Columbia society deserves every praise. Besides this, every hospital there receiving Government aid has to receive a certain number of consumptives, thus placing British Columbia in this regard ahead of the other provinces.

"Reports from Alberta show an anxiety on the part of many for something practical being done at an early date, and it is our hope that something may be accomplished during the coming year.

"In Saskatchewan the various local leagues organized during the past year sent representatives to Regina, where a provincial association was formed. It is their immediate purpose to start a sanatorium for the tuberculous, and towards that end the Provincial Government has promised $25,000. Education by means of lectures and literature has also been carried on during the year.

"In Manitoba, the sanatorium at Ninette has been formally opened, and is now in full running order and receiving patients. In Winnipeg a temporary home for advanced cases is under way and much educational work has been done in the city and throughout the province. We are pleased to have this active association now affiliated with the Canadian Association.

"In Nova Scotia much in an educational way has been done throughout the province. Tuberculosis has now become a notifiable disease in the province. Especially noteworthy is the book upon consumption and its prevention, issued by the Tri-County League. It is their purpose to distribute some 50,000 copies of these books, free of cost, throughout the northern part of Nova Scotia. A new idea for raising the necessary money for the books is the inclusion of local advertisements. Besides this, county and town councils materially assisted in the work. In Halifax a lot has been accomplished in looking after the tuberculous poor, and also in the matter of education by the Halifax County Anti-Tuberculous Society. They are projecting a much needed hospital for advanced cases in that city. In Kentville the sanatorium, which is always full, is proving of much benefit to the community, and we learn with pleasure that it is to be enlarged and better equipped.

"In Sydney, the Ladies' Auxiliary has united with the Daughters of the Empire in supporting a visiting nurse. The various other local leagues are more or less active Colchester still doing active and most useful work with its visiting nurse and educational lectures and literature.

"In Prince Edward Island the Charlottetown dispensary is operating satisfactorily, and the hope is expressed that some accommodation will soon be provided on the island for the tuberculous.

"In New Brunswick, following the recommendation of the commission appointed last year to study the tuberculosis question, they are planning for a sanatorium in the province. In St. John they operate a dispensary, employ a visiting nurse and have held many public meetings. The local leagues in other parts of the province, Fredericton and Moncton, are also doing something towards helping needy cases in their localities, and in an educational way.

"In Quebec, besides the institutions at Montreal, St. Agathe and Lake Edward, and the opening of the new dispensary in Quebec City, the most noteworthy thing during the year is the report of the royal commission upon tuberculosis. This report strongly urges a vigorous educational campaign and advocates such measures as obligatory notification, disinfection, rules against spitting in public, isolation, and provision for the sufferers, anti-tuberculosis dispensaries, proper medical inspection of schools and industrial establishments, open air schools, sanitary dwelling and the prevention of alcoholism.

"The work in Ontario has shown a decided advance during the year. That county sanatoria are a necessary part of the compaign is gradually being recognized throughout the province. In Hamilton, Ottawa, London and St. Catharines we have examples of what such institutions may accomplish. Local sanatoria are now projected in Brantford, Guelph, Windsor, Chatham and Kingston and Waterloo County. The dispensaries now open in various parts of the province, with the visiting nurses in connection with them, are proving their worth. An increased interest in the work among tuberculous children is shown. Especially noteworthy is the new preventorium and school for tuberculous children of the Mountain Sanatorium, Hamilton, and the new "Heather Club" pavilion on the Lakeside Hospital grounds, Toronto, while the institution here in London has given a splendid impetus to the cause throughout the province. The Hygienic Nine is also doing a praiseworthy work. We are pleased to note, also that the Toronto Board of Health is taking such active measures against tuberculosis.

In thus briefly reviewing the later efforts of the affiliated societies of the Canadian Association, it must not be forgotten that some of the most substantial work is being done by the older associations, such as those in Hamilton, Ottawa, Montreal, etc., and we should also like to take this opportunity of congratulating the National Sanatorium Association for the great work which it has been carrying on in Gravenhurst and Weston during the past

decade; to extend also to that organization our sympathy for the loss sustained by them in the fire at Weston.

"Under amendments of the Ontario Public Health Act, physicians are now required to make returns to the chief health officer of "all diseases dangerous to the public health." This includes tuberculosis, and the statistics thus obtained should prove useful to the health authorities in working for the control of this disease. The Ontario Government is to be congratulated for its part in educating the public in the prevention of tuberculosis by the travelling exhibit under the Provincial Board of Health. This has been in a large number of towns and villages during the winter, where lantern demonstrations have been given and lectures delivered. The Provincial Government has encouraged the erection and maintenance of county and municipal sanatoria by its generous treatment of such institutions ($3 per week, instead of $1.50 per week, being now set aside for the maintenance of those patients not paying above $4.90). As will be seen in Dr. Bruce Smith's report, 1,372 patients were admitted to the special hospitals or sanatoria for treatment and care for the tuberculous during the past year, besides the many treated in the various local dispensaries in the province. It is worthy of mention also that the public school hygiene has now a chapter upon tuberculosis.

"Throughout the whole Dominion, therefore, interest in the subject has been steadily growing. The question was freely discussed at more than one of the sittings of the Conservation Commission, and we hope that through the Commission the Federal Government will see its way to give yet further material support to the campaign against tuberculosis. Much literature has been sent out by our own association during the year. The new posters have been printed as well as the revised leaflet, of which many thousands have already been distributed.

"Eight thousand of our annual reports in English have been distributed, and also 2,500 reports in French.

"The question of setting aside a special tuberculosis day has again been brought before the notice of the executive, and will be considered.

"We are pleased to note that our president, Professor Adami, and Dr. Prevost have been appointed by the Dominion Government, and Dr. Hodgetts by the Conservation Commission, as delegates to the seventh international congress, to be held in Rome from the 24th to the 30th of September, 1911.

"The lectures, 55 in number, delivered during the year by our secretary have, as a rule, been largely attended, as have those also of our French lecturers, Dr. Valin and Dr. Bourgeois. These, together with a list of the new societies organized, are appended to this report.

"Finally, our association desires to thank the press for their hearty co-operation and help in the campaign for which this association stands."

That all these efforts are proving useful cannot now be doubted. The mortality from tuberculosis is declining in at least one province, Ontario—as pointed out by Dr. Porter in the March issue of this Journal. In the decade preceding 1899 the death rate from this disease was on the increase until in that year the figure amounted to 3,405 (a rate of 1.4 per 1,000 living estimated population, or, in other words, 11.8 per cent. of the total deaths.)

During that time there were no institutions for the tuberculous in the province, no dispensaries, no special visiting nurses, no educational agencies at work, no general information regarding the prevention of this disease. In 1899 there was only one institution; now there are 12 of them in the province, and other projected; four dispensaries, and an increasing number of visiting nurses, while a general campaign is being carried on. In 1908 the deaths from tuberculosis were 2,511 (a rate of 1.1 per 1,000, or 7.6 per cent. of the total deaths).

We think it is only fair to assume then, that this decline from 11.8 per cent. to 7.6 per cent. is due, at least in some measure, to the efforts already put forth to stamp out this disease. And if so, we feel justified in looking for a still further decrease in the death rate, if more accommodation could be provided for the tuberculous, especially the advanced cases, and still more done to enlighten the public regarding the means of preventing this widespread but controllable disease.

The Brantford Board of Health.

The Brantford, Ontario, Board of Health, by the advice of Dr. Pearson, Medical Health Officer, has joined London, Toronto and other centres in recommending that the common drinking cups in schools and public institutions be abolished and that individual paper cups or bubbling fountains be substituted therefore. The Board of Health is also going after the butchers with a view of inspecting slaughter houses where meat offered for local sale is slaughtered, and insisting on having meat sold on the market wrapped in clean paper, rather than in old newspapers as in the past. The board also recommends that the milk standard for butter fat be increased.

The Garbage of Windsor.

The following notice regarding the care of garbage is being distributed by the Windsor, Ontario, public works committee:—

"Under the existing by-law every householder is required to have properly covered galvanized iron cans for depositing garbage in; to contain nothing but garbage. No glass, cans, crockery, etc., and no water. Cans are to be placed conveniently for collectors, preferably at the back fence where there are alleys and in sight of collectors where there are no alleys. Complaints of non-collection are to be made to phone No. 141, city hall, any day between 9 and 10 a.m.

"Papers must be destroyed on the premises or properly bundled if collected.

"Grocers and fruit dealers must take care of and remove their own material of any kind.

"Collections are made twice a week in June, July, August and September, once a week throughout the rest of the year.

"Any person throwing rubbish, etc., in alleys or streets is amenable to the by-law and will be prosecuted.

"Persons guilty of an infraction of the garbage by-law are subject to a fine of not less than one dollar and costs or imprisonment of ten days."

Montreal and Tuberculosis.

Since the first of the year, there have been 323 deaths in Montreal from tuberculosis and 500 cases have been reported to the authorities. Dr. Laberge, City Health Officer, speaking of the large number, finds that the increase is not so much that the disease is growing, but that the doctors are reporting the cases better than they did before.

London's Health Officer on the Covering of Food.

The practice of provision merchants, fruit merchants, butchers and others in displaying foodstuffs outside their shops on racks has been strongly condemned by Medical Health Officer Hutchinson, of London, Ontario. In a recommendation to the Board of Health, he suggests that by-laws be passed that will prohibit the sale of any food thus displayed. Dr. Hutchinson expressed his views on so displaying goods for sale:

"The dust from the streets blowing on the fish, fruit and vegetables that are displayed outside forms one of the best germ-breeding mediums that could be conceived of," says Dr. Hutchinson. "When the streets are being swept the filth, and dust from the pavements, with the germs that infest it, are naturally thrown into the air and alight on this food. No food of any description should be allowed to be displayed in front of stores where it would be exposed to every disease germ floating in the outside air."

Water Contamination of New Ontario.

A correspondent reports that unless immediate steps are taken there may be a very serious epidemic of typhoid in parts of New Ontario. There is at present no water in any of the settlements in the neighborhood of Porcupine except from wells, and, as analysis has shown, many of these have been contaminated. Golden City, the site that the Government sold, has good water in Bobbs Lake and arrangements should at once be made to pipe it over, the Government contributing. In the meantime, the sanitary inspectors are doing all they can to prevent the accumulation of refuse and are compelling the carting away and burning of all refuse, but without pure water these precautions are not likely to prove effective against an epidemic. Pipes are being laid from South Porcupine to Porcupine River for a temporary supply of water. With the pro-

mise that Porcupine now has of permanency, no time should be lost in obtaining water from the Matagami River.

British Columbia Medical Association.

On August 31, and September 1, 1911, the thirteenth annual meeting of the British Columbia Medical Association will be held in Vancouver. The secretary is Dr. A. S. Monro of that city.

Alberta Medical Council.

The members of the Alberta Medical Council for the ensuing four years are: District No. I., Dr. John Park; District No. II., Dr. F. W. Crang; District No. III., Dr. C. W. Field; District No. IV., Dr. R. G. Brett; District No. V., Dr. C. J. Stewart; District No. VI., Dr. C. H. Malcolmson; District No. VII., Dr. F. H. Mewburn.

Dr. R. G. Brett, Banff, was re-elected by acclamation.

INTERNATIONAL

International Milk Exhibit and Conference of Municipal Health Officials.

One of the most comprehensive milk exhibits ever held was opened in Philadelphia, Pa., on the twentieth of last month under the auspices of the Department of Public Health, the Pediatric Society, the Veterinary Department of the University of Pennsylvania, the Bureau of Municipal Research and other local co-operating bodies. Every stage in the handling of milk from the dairy to the consumer's table or the baby's nursing bottle was shown in the exhibit.

The committee in charge had data showing that not less than one-third of the 250,000 babies under one year old who die each year in the United States are victims of infected milk and ignorant feeding. The exhibit demonstrated that clean milk is one of the best and cheapest of all foods; that dirty milk at any price costs too much; and that every dairyman, transportation company, milk dealer, health official, housewife and taxpayer has a definite responsibility in protecting milk from contamination.

The American Association of Medical Milk Commissions, the Certified Milk Producers' Association of America, and a conference of municipal health officials met in Philadelphia during the holding of the exhibit. The United States Department of Agriculture conducted a milk contest, scoring milk with scientific accuracy. Lectures and demonstrations, with moving pictures, stereopticon slides, photographs, and other illustrative devices were given daily by leading experts of the United States and Canada.

International Municipal Congress and Exposition.

A United States Government circular of instruction entitled "General Instruction Consular, No. 36," has been issued under the title "International Municipal Congress and Exposition at Chicago," and a copy sent to each representative of the United States abroad. The text of the circular is as follows:

The department is advised by the Chicago Association of Commerce that there will be held in that city from September 18-30 next an international municipal congress and exposition under the auspices of the Association of Commerce.

This congress and exposition will be thoroughly international in its scope, and is the first one of this kind ever held in the United States. It is intended to set forth the advancement of municipalities by showing the possibilities of making city government an asset, and of capitalizing a city's attractions.

It is desired that all cities shall participate in the congress and exposition which have anything to offer of advanced ideas along such lines as charters, forms of government, municipal accounting, parks, playgrounds, health, sanitation, charity

and correction, taxation, home rule, fire, schools, police, and libraries.

It is hoped that each city may be represented by a personal delegation and by some contribution in the shape of models, charts, photographs, and views.

The presence of experts of world-wide fame and known ability will make possible comparisons between communities and cities, thus offering the opportunity of contributing and the privilege of learning.

Formal invitations will be, at a later date, forwarded by the Chicago association of commerce direct. There will be held at the same time in Chicago an international good roads congress.

While these congresses are not under the auspices of the government of the United States, this government would be glad if the government of the country to which you are accredited would give due publicity to the congresses and recommend the sending of delegates by the municipalities and organizations interested.

You will communicate to the foreign office the invitations to the congresses, and request that due publicity may be given to them.

UNITED STATES

The American Medical Association and an Iowa Plan for the Centralization of Public Health Government.

At the meeting of the American Medical Association, which convenes in Los Angeles this month, Secretary Sumner, of the Iowa State Board of Health, will present a radical system of public health government which, if adopted, would centralize public health matters in a distinct branch of the federal government.

The public health department as outlined by Secretary Sumner, has two departments or functions, executive and legislative.

His plan is to create a federal department of which the surgeon general of the United States Government shall be the chief head. He shall appoint one disease inspector for each state, upon civil service examination, said inspector to hold the place for life or during good behavior. The inspectors shall not remain longer than one or two years in any one state, but shall be itinerant as the bank examiners are.

Under the executive department of the health bureau shall be placed the United States Geological Survey, which shall take entire charge of the investigation of the pollution of all the streams of the country. The Geological Survey is to make its stream pollution inspection with the state boards of health in each state.

The legislative function of this proposed health department shall be centered in a congress composed of the federal disease inspectors, the members of the Geological Survey and the state boards of health. This legislative body shall meet once every year, with the surgeon-general as the presiding officer. It shall formulate and promulgate rules for uniform quarantine, the proper disposal of the dead and the uniform rules for the transportation of corpses, and, in fact, everything relating to the public health of the country. It shall establish a sanitary code which shall affect all states alike and be the law of the land with reference to health matters.

The state boards of health are to be co-ordinate branches of the public health government, the same as state governments are co-ordinate with the federal government, each supreme in its own particular field.

He also provides that there shall be federal sanitary inspection, by this new federal health department, of interstate trains and Pullmans, with state sanitary inspection of street cars, local trains, hotels and depots.

Diagramatic Travelling Report of the Household Fly by El Paso's Health Board Artist.

Public Health and the U. S. Congress.

A protest is registered in a statement given out by the National Association for the Study and Prevention of Tuberculosis against the existing conditions in the United States Congress which require measures concerning public health to be referred to a committee on commerce. At the same time, a plea was made for a new Committee on Public Health in the House of Representatives, similar to the one now existing in the Senate.

The National Association in its statement supports the Committee of One Hundred on National Health in its assertion that under the present division of committees, owing to the large number of measures before the Committee on Interstate and Foreign Commerce, public health matters do not receive the attention they deserve. The statement says that hogs, cows, and steel rails receive much more attention than that most vital disease. At the present time, the anti-tuberculosis workers declare, no committee in the House has any direct responsibility for health legislation. It is therefore suggested that a new committee be formed, similar to the one in the Senate.

The National Association is appealing to its 510 affiliated associations in all parts of the United States to support the movement for the formation of such a committee in the House.

Rochester's Health Officer and Child Hygiene.

In his recent report Health Officer Goler of Rochester discusses child hygiene. This is what Dr. Goler says on the subject:

When a little child is born into the world it ought not to find waiting at the threshold a foul disease that will rob it of its sight; deprived of its mother's milk, with its one little stomach it has to labor hard to digest the milk intended for a big calf baby with four stomachs, even if that milk is free from manure and filth; and as it grows it is overshadowed by the awful menace of the infectious diseases of childhood, by adenoids, tonsilar enlargement and tooth decay.

Adenoid growths and tonsils, both large and small, together with the infectious diseases of childhood, are responsible for most of the early tooth decay; for the low stature and weight for age, often amounting to as much as 8 per cent. at the age of 14; for the lopsided ears, red eyelids and asymmetrical mal-development of the face.

We have prevented many of the hunchbacks, club feet, knock knees, the smallpox and syphillis in the young, even some striking physical deformities in the stunted bodies and irregular faces of our children. Among the most evident of these deformities is that produced by tooth decay, and it is the first to the relief and then to the prevention of this condition that we must now address our efforts, trusting that in the time to come we may so broadly teach the lessons of child hygiene, and we may have such active public support for them, that the time will soon arrive when all children will be of robust body, average stature and having early been relieved of their adenoids and tonsils, having escaped the so-called infectious diseases of childhood, they will, as a result of the care of the physician and dentist, present in their mouths regular and unfilled sets of teeth. the presence of a prominent filling or a gold crown in the mouth of a child will be a sign to all men that neither the state nor the parents has yet learned the lesson and the value of child hygiene.

Five years ago fifty children under 15, who were temporarily refused permits to work because they were undersized and under weight, were subjected to a closer inspection — not to be termed an examination. The average height of these children was 56.2 inches. Hitchcock gives as the average height of Boston school children of the same age period 60.5 inches. The average weight of these fifty children was 77½ pounds. Hitchcock's average of children at the same age period was 94 pounds.

Of the fifty children examined, all of them had lost one or more permanent teeth, and they had several caries, in some cases more or less rudimentary teeth. Nearly every child had dirty teeth.

Forty-seven had dental defects, and in addition to these had diseases of the nose and throat, such as naso-pharyngeal catarrh, large tonsils or obstructed nostrils. Five had defects of the teeth, nose, throat, ear, and marked enlargement of the cervical lymph glands. Four had defects of teeth, nose, throat, and eczema. Five had dental caries, naso-pharyngeal diseases and marked, asymmetry of the

fans. Three had tuberculosis. Two had syphilis. One had anaemia. One had St. Vitus' dance.

Questions of Public Health at the Meeting of the American Society for the Promotion of Useful Knowledge.

Declaring that race suicide is due to an increase in intelligence, and theorizing that the human emotions become fewer as human beings become better educated, Dr. Paul Haupt, professor of Semitic languages at Johns Hopkins University, Baltimore, made one of the closing addresses at the last session of the recent meeting of the American Philosophical Society for the Promotion of Useful Knowledge.

Dr. Haupt spoke upon "An Ancient Protest Against the Curse of Eve," and confined himself wholly to observations upon race suicide.

"Reasoning is the simple cure for fear," declared Dr. George Crile, professor of clinical surgery at the Western Reserve University, Cleveland, in his address. Many people hurry to a physician when they are frightened, not knowing what ails them, he thought.

Dr. Crile asserted that fear is probably the most damaging of emotions because of its tendency to grow to large proportions. Neither the brain nor any other part of the human body can respond to any lesser stimulant during the reign of the emotion of fear. The quickest way to cure fear and its effects is to reason with the patient and convince him that the effects of the fright itself is usually worse than that which has caused the fear.

He explained that when fear grips the human being or the animal the entire body, including all the organs, are suddenly stimulated and the body is ready for flight or terrific battle, whichever it occurs to the mind to adopt as the proper course to follow.

Dr. Walter B. Cannon, professor of physiology at Harvard, also spoke on the effects of fear. He said:—

"Examination of the blood of excited animals reveals the presence of adrenal secretion, which was not present when the blood was examined before the animal was frightened. It is probable that the adrenal secretion continues the excited state. Possibly the adrenal secretion, caused by the emotional disturbances, has some of the effects produced by injection of the substance — such as glycosuria and atheroma of arteries. Two of my students have recently shown that glycosuria can be produced in a cat by fright."

Dr. H. A. Wilson, professor of physics at McGill University, Montreal, spoke on the "Constitution of Atoms." He explained that the atom undoubtedly could be divided into smaller portions known as negative electrons. He said, however, that these minor divisions had never been seen, but had been established as a matter of science. He refuted the statements of some recent scientists that the ether in the air is becoming extinct and asserted that it was becoming stronger than ever.

THE EMPIRE AND THE WORLD ABROAD

Meeting of the Association of County Councils in Scotland and the Sale of Quack Medicines.

At the annual meeting of the Association of County Councils in Scotland, recently held in Edinburgh, the Executive Committee recommended the Association to adopt a resolution to the effect that the Sale of Food and Drugs Act should be amended and extended so as to provide:

1. That for medicines which are supplied otherwise than upon medical, dental, or veterinarian prescriptions, no condition of sale short of the publication on each packet of medicine of the name and quantity of each of its constituents should be permitted.

2. That the label should be made to constitute a warranty, and that false description, whether on the label or main advertisement, should be made an offence.

3. That the provisions of the Sale of Food and Drugs Acts should be applied to proprietary medicines. It was further recommended that a copy of the resolution should be sent to the Prime Minister, the Secretary for Scotland, the Board of Agriculture and Fisheries, and the Local Government Board for Scotland.

It was pointed out that a gigantic trade was done in secret remedies, commonly known as quack medicines, which the Act did not touch; that the stamp duty on packets of medicine in 1889 was £266,000, and in 1908 £334,000, and the cost to the public over three and a quarter millions. The most exorbitant prices were charged. The British Medical Association had had exhaustive analyses made of these medicines, as the result of which it was revealed what was charged to the public at 1s. 1½d. cost the thirtieth part of a farthing. Not only were the public being swindled, but many of the component parts of these medicines were deleterious, and often diseases which could easily have been tackled by medical science in their earlier stages became chronic and incurable owing to the use of quack remedies. Great Britain was very far behind other countries. There was complete prohibition in some countries on the Continent of Europe, and restriction in others; and outlying countries of the British Empire were following that example. Farmers were prosecuted for having a little additional water in their milk, yet under the present legislation the swindling patent medicine vendor, who was living in luxurious style upon his ill-gotten thousands, was allowed to go free. A county council had to prosecute the grocer who had a little margarine in his butter, but could not touch the medicine vendor who used margarine as a component of the most deleterious compounds sometimes. It was high time the Legislature were taking action in the matter, but it was evident the Central Government would not do so without considerable pressure.

Dried Fish in London, England, as a Cause of Typhoid Fever.

In submitting to the Public Health Committee of the London County Council a report by Dr. W. H. Hamer on certain localized prevalences of typhoid fever in London in 1910, Dr. Murphy, the council's medical officer, states that during the past 25 years typhoid fever has markedly declined in prevalence in London. A study of the cases in recent years shows that they display a marked tendency to occur in groups, and that, for the most part, localities occupied by the very poor are especially affected. Moreover, the same localities have been in some instances repeatedly attacked year after year. Thus the prevalence of 1910 affected an area in Bethnal-green almost identical in extent with that involved two years before.

In 1900, in 1903, and again in 1908 the consumption of infected fish was suspected as the cause of the prevalence, and the Bethnal-green outbreak was sufficient to enable the question of shellfish, which had complicated the problem in 1908, to be eliminated. An examination of the sources of supply of dried fish to the 49 sufferers from typhoid fever in the affected locality showed that they had, in all probability, obtained their fish from one or other of three shops, two of which had a common source of fish supply. Coincidently with the outbreak in the specially affected area in Bethnal-green, a number of other localized prevalences of typhoid fever developed in other parts of London generally. It was found that all sufferers contributing to the excessive prevalences had partaken of fish (usually dried fish), and that in all the instances in which information on this head could be obtained small plaice belonging to the category described by dried fish vendors as "late steamer fish" was in question.

Dr. Hamer in his report points out that the kind of fish implicated was plaice (including in this term flounders and dabs); that small plaice were specially open to suspicion; that the question of imperfect cleansing of the fish was important in connection with the communication of infection; and that the fish were already infected before reaching the retail vendor. He draws attention to the fact, established by the inquiries and reports of officers of the Board of Trade, that much of the small plaice sold at Billingsgate comes from an area in which are situated certain "nurs-

ery grounds'' not far from the mouth of the Elbe.

Plaice is practically the only fish used by vendors of dried fish which is not gutted as a matter of course at sea, and Dr. Hamer says it is clearly desirable in the interest of the public health that no plaice which has not been gutted should be exposed for sale in the market.

Health Matters in British Guiana.

A Blue Book report of British Guiana for 1909-10, prepared by Mr. J. Hampden King, Assistant Government Secretary, has been received at the British Colonial Office and presented to both Houses of Parliament. The section devoted to vital statistics and public health gives the present estimated population of the Colony as 305,097 — 158,435 males and 146,662 females. The birth rate for 1909 was 29.3 per 1,000 of the population, the mean rate for the previous five years having been 30.4. Of the births registered 3,577, or 40 per cent., were legitimate, and 5,370, or 60 per cent., were illegitimate. The birth rate per 1,000 of the estimated population of each of the different races represented in the community was as follows: Europeans (other than Portuguese), 11.1; Portuguese, 23.8; East Indians, 27.6; Chinese, 32.2; Aborigines, 61.3; Blacks, 30.9; and Mixed Races, 27.5. The death rate was 30.0 per 1,000, as compared with a mean rate for the previous five years of 30.5. The mortality amongst children under one year continues to be high, and the mean rate for the past five years has been 210 per 1,000. The health of this province of the Empire showed no marked improvement over the previous year. There was no epidemic of any dangerous, infectious or contagious disease, though the existence of yellow fever and plague in neighboring places gave rise to considerable anxiety. Malarial fever continues to claim a large number of victims, and efforts are being made by legislative and other action to control the mosquito pest. Quinine is now sold at the district post offices all over the province at cost price, and its use is steadily increasing. In 1909-10 some 2,076 ounces were thus sold. Steps were taken to procure this drug put up in chocolate with a view of increasing its consumption among the children, but this method has proved too expensive. The Medical Department continues to give attention to the question of ankylostomiasis, and the interest that has been aroused in this connection among the employers of labor on the sugar estates and among the laborers themselves is bearing fruit.

There were a few sporadic cases of enteric and blackwater fevers, but, as usual, the principal causes of death were malarial fevers, diarrhœal diseases, and phthisis and other forms of tuberculosis. Professor Deycke's system of treatment of leprosy by ''nastin'' is being steadily followed at the leper asylums on the lines laid down by him. Several cases have so much improved that it is hoped they may shortly be discharged. There are five public hospitals in the principal centres of population, and the outlying districts are served by dispensary hospitals and dispensaries. The immigration law also requires the maintenance of hospitals on every plantation on which there are indentured East Indian laborers, and these institutions are available for the treatment of emergency and pauper cases from the general community. The daily average number of in-patients was 705. There were 1,890 deaths. Out door treatment was given to 74,646 persons.

An ordinance has been passed which gives power to take special measures of precaution in case the province is threatened with an invasion of a dangerous epidemic disease which the ordinary law is inadequate to deal with. The idea is to have the means of at once dealing with any dangerous disease which makes its appearance, instead of having to wait till the legislature can give the necessary special powers, and to avoid a delay during which the disease might make serious headway. It may be of interest to mention that an ordinance has also been passed withdrawing all protection from carrion crows and permitting them to be killed like vermin in any part of the province. Until lately they were thought to be useful as scavengers and were protected from destruction, it being an offence to kill them; but it is now agreed that they are dangerous as disseminators of disease by fouling water, and that any usefulness they possess is more than counterbalanced by the risk of spreading infection.

Amsterdam and the Disposal of Rubbish.

Amsterdam consular reports state that hitherto rubbish collected by street cleaners in that town has been assorted—paper, rags, metals, and glass have been sold to dealers therein, and the residue as manure. The city authorities are now, however, considering converting the street rubbish as a mass into combustible briquettes for heating boilers. They have found that at Southwark, and at St. Ouen, France, street rubbish is transformed into a marketable product. At Southwark all the refuse is crushed to a powder, which is sold as a manure. At St. Ouen the powder thus made, with the addition of combustible substances, is formed into a cheap fuel. The Amsterdam authorities experimented at that place, combining powder made there with coal tar from the Amsterdam gasworks, and pressing the substance into briquettes. The experiment was successful, and disposed the Amsterdam authorities towards establishing a plant for producing briquettes from street rubbish. The quantity of material which can be worked in this city is about 140,000 tons a year. It is estimated that an establishment to work this will cost about $200,000; that the annual expense thereof will be about $98,000; that the product will be about 85,000 tons. It is believed that the briquettes can be sold at a profit of over $20,000 a year. At present the street refuse of Amsterdam is disposed of at a loss of $18,000 a year. Besides the anticipated financial profit, it is reasoned that the danger in times of epidemic will be much reduced by the transformation of street refuse, which amounts to destruction.

Dresden and the Barbers.

A Consular report on the subject of municipal inspection states that in Dresden last year's inspection of barbers and hairdressers included 39 hairdressers and 549 barbers' shops. This inspection took place by authority of the city council, and was carried out by the police, the regulation having been introduced to limit the spread in infectious diseases through those channels. In 35 cases it was necessary to report serious defects. There were five cases of insufficient cleanliness of the rooms, six cases of insufficient cleanliness of the instruments, three cases of sickness and insufficient cleanliness of the staff, three cases of violation of the regulations as to the serving of customers, seven cases in which the sign was wanting or insufficient, seven cases of employment of boys without a proper timebook or with insufficient booking, three cases of insufficient sleeping room for the assistants, and in one case insufficient room in the shop. A number of unimportant defects also were discovered, but on notice being drawn to them they were at once removed.

Sanitary Hotels in France.

The first attempt made by the Touring Club of France in health directions, as recently reported, was to insist on the sanitary reform of the hotels that tourists were likely to frequent. The paper in a Touring Club hotel is stripped off the walls and washable paint or distemper is employed instead. The floors are wood blocks polished with beeswax or are laid with tiles. A small rug or two that can be lifted away and shaken alone is allowed on the floor. The numerous culture grounds for infective material provided by the old-fashioned manner of furnishing hotel rooms are thus done away with. Plenty of light and every facility for cleaning are provided and in some cases now the angles between the walls and the floor and ceiling are being rounded off, so that these havens of dust will soon exist no more.

The members of the Touring Club are provided with regular forms, so that they can send complaints to the central office if any hotel fails to keep the rules laid down. These rules relate not only to sanitation, but also to the charges. After thus seeking to improve the hotels, the Touring Club exercises its great influence to maintain the roads by which all the beautiful parts of the country can be reached.

In the dispensary from the beginning will be established the record of your stock taking; but along with it must go your record in the county health office or the provincial offices. These cannot long resist the constant dropping of a postal card and a politician is afraid of nothing so much as the growing intelligence of his uselessness in his community and he will soon become active to such a stimulation or give place to some one more able than himself.

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Special Articles

THE SANITARY OFFICER, HIS DUTIES, QUALIFICATIONS AND SCOPE OF WORK ON ACTIVE SERVICE

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An army in the field may roughly be divided into two parts: the part that is employed within the zone of active operations, marching, countermarching, bivouacking, billeting, sometimes camping, often enduring privations, and now and then fighting, and the second part, employed on the lines of communication, transporting personnel and stores, maintaining rail, road and waterways, administering cities, towns, posts and camps, and, in a word, carrying out all those manifold arrangements which are necessary to maintain in an efficient condition the fighting portion in front.

In both parts the health of the troops must be maintained, but the sanitary problems involved in each case, are so different that different systems must be employed in order to meet those conditions. For instance, the troops in the zone of operations are for ever moving or expecting to be moved. There is no permanence about the positions or locations they occupy. Nothing of a permanent character such as one associates with municipal sanitation is applicable to them. It is true that a military unit or collection of units may reach a place on the line of march and bivouac there, expecting to be en route next morning. Instead, new orders may be received, and they will remain inactive perhaps for days and weeks before marching again. But all this time they will be in daily expectation of marching off at an hour's notice. Again, a unit may one day form part of a large force in one place, and on the next day form part of a much smaller force, or even be on detached duty elsewhere. Billets and bivouacs will be occupied as military exigencies may dictate, and not as sanitary ideas would prefer,

and the scene will be constantly shifting, amid strange, unexpected, and probably hostile surroundings. Under such conditions it may readily be understood that any system devised to maintain sanitary conditions must be based on the military unit itself and not on the area it occupies. Each unit must be trained to completely look after its sanitary needs, and undertake such rough and ready sanitary precautions as experience has proved necessary, without relying in any way on outside help.

With the troops on the lines of communication the problems presented are entirely different. Here the troops are practically stationary, quartered in cities, towns, posts and camps along the various roads, railways and waterways connecting the army in front with the base of supplies and the zone of distribution, in the rear. The problems involved now are those connected with the sanitation of areas. The system that will successfully cope with such conditions must, therefore, take on many of the functions of a municipal sanitary authority.

To meet these different conditions the following systems have been devised. For purpose of illustration, let us suppose that the part of the army in the zone of active operations consists of one Division (roughly 19,000 men). The General Officer Commanding the Division is responsible for the health of his men and the maintenance of all possible sanitary precautions. His adviser in these matters, and the one to whom he largely delegates these duties, is the Administrative Medical Officer of the Division. The A.M.O., however, besides being the sanitary, is also the medical adviser of his chief, as well as being the commanding officer of all the medical units in the Division; therefore, he is allowed a sanitary officer to help him in this phase of his work. This officer's especial duty is to oversee and coordinate the sanitation of the units composing the Division, and to keep the A. M. O. informed of the sanitary condition of the troops and suggest such steps as he may consider necessary to be taken from time to time to avoid disease. For sanitary purposes the Division may be considered made up of several independent units, whose commanders are each responsible to the general officer commanding for the sanitation of their units and the health of their men. These units are of various sizes, consisting of battalions of infantry, regiments of cavalry, brigades of artillery, groups of engineer troops, supply columns and parks, and field ambulances. Each unit has a regimental medical officer allotted to it, who is the sanitary adviser of the commanding officer. Acting on his advice the unit commander carries out such sanitary precautions as the circumstances under which the unit is placed may call for, and which military exigencies may allow. For this work, if necessary, the commanding officer may employ all the personnel under his command, but usually one N.C.O. and 8 men per battalion (that is one man per company), or a smaller quota for small units, are considered sufficient to maintain sanitary conditions, once the field sanitary constructions necessary have been made by a fatigue party. The nature and extent of these constructions will vary with the local conditions, nature of the ground, and length of stay. The great rule that must be observed, unless prevented by tactical reasons, is that no ground surface or water supply is to be polluted; and that all places at which stops, no matter how temporary, have been made, must be left as clean on departure as before arrival. How this rule may best be carried out in each case is left to the commanding officer acting on the advice of his sanitary adviser; but the result must be satisfactory. The plan of incinerators, foul-water sinks, latrines and urinals decided upon are minor considerations, the main thing is that all organic waste material whatever must be burnt whenever possible, and if not, then buried and the burial places plainly marked with raised mounds of earth. No troops should be allowed to fall out at the mid-day or evening halting places, before latrines have been dug and the water supplies guarded. When billets are allotted no houses (except those found inhabited by cases of contagious disease) are to be rejected for sanitary reasons. In such cases, especially if the occupation extends for more than one night, it is the duty of the commanding officer or of such officer as he may delegate to carry out his duties in this connection, to see that these billets are rendered sanitary by the men occupying them.

The regimental medical officer is a sanitary adviser and has no executive duties, except such as his commanding officer may

delegate to him. He must be very tactful in carrying out his work, and while overseeing sanitary conditions and pointing out, advising, and insisting with all his might on sanitary precautions, must always remember that it would be destructive to discipline to personally order any men of the unit to do sanitary work, unless these men have been placed especially under his command for the purpose. Such a proceeding would be looked upon in the army very much in the same light as a householder would regard the action of a municipal sanitary authority who, perceiving some insanitary condition or other on the premises, would come unannounced into his house and order about his servants. The offence is equally glaring, and the feeling of resentment would be much the same. The proper course would be for the authority to deal with the householder, who alone has the right to order his servants about. In the same way, the sanitary officer must work through the unit's commanding officer, and so on down the chain.

In this way the sanitation of the troops employed in the zone of operations is maintained. Each unit is responsible for the health of its personnel and for the maintenance of the sanitary condition of the area it occupies, no matter for how short a time. Questions involving special knowledge and co-operation, such as the outbreak of epidemic disease, the occurrence of polluted food or water supplies, are referred for advice to the sanitary officer attached to the staff of the A.M.O.

In addition to the above personnel, the War Establishments of the British Army provide for a small detachment of technically trained men from the R.A.M.C., to be attached to each unit to carry out the duties connected with water purification. These detachments take charge of the unit's water carts, and are available for such other technical duties as the regimental medical officer may require to have performed. These detachments vary from 1 to 5 men, in accordance with the size of the unit. Owing to the different conditions in this country, with its scattered population and large water courses, and trusting to simplification of water purification in the future (especially when dealing with the temporary use of polluted water supplies) which the hypochlorite treatment leads us confidently to expect, similar detachments have not been provided for in the War Establishments of the Canadian Militia. Instead, however, each Field Ambulance has had a sanitary section consisting of one sanitary officer, one N.C.O., and four men attached to its personnel. As there are three Field Ambulances in each Division, the A.M.O. has three of these sanitary sections at his command, which he may use when required, throughout the Division, to carry out such technical duties as the purification of water, disinfection, and sanitary inspection, or to co-operate with any unit involved in such special difficulties as the stamping out of epidemic disease.

This is, in brief, a description of the system under which the sanitation of the ever-moving troops of the army in the zone of operations is maintained. Practically everything is left to the individual units, under the general supervision and direction of the A.M.O., aided by his sanitary officer and the personnel of the three sanitary sections of the field ambulances, which he may detach for duty throughout the Division as exigencies may require.

The sanitation of the troops on the lines of communication is maintained in an entirely different way. Of course, the troops allotted to lines of communication for defence purposes, and troops marching along the roads in column of route, preserve their unit integrity and are, therefore, held amenable to the same regulations as govern the troops in front; but many of the troops passing up and down the lines have lost for the time being their unit integrity. They are simply passengers, and as such must depend upon the sanitary conveniences provided for them at the various stopping places. The same in a greater degree applies to the convoys of sick and wounded passing back towards the base. Again, at the various centres and posts are gathered large masses of men made up of details of technical troops and civilian employees with no unit organization whatever. It becomes evident, therefore, that the unit-system of sanitation can no longer apply, and that a system based on the sanitation of areas irrespective of the troops occupying them must be evolved.

Now for the purposes of administration the lines of communication are divided into administrative districts and posts, each un-

der its commander, and all under the Inspector-General of Communications. The Inspector-General has a chief medical officer called the Deputy Director of Medical Services, to advise him in sanitary matters, and this officer, like the A.M.O., has a sanitary officer allotted to him to take charge of this phase of the work. Now, just as the G. O. C. of a Division is responsible for the sanitation of all the troops in his Division, and holds the unit commanders responsible to him, so the Inspector-General of Communications is responsible for the sanitation of the troops on the lines of communication and holds the district and post commanders responsible in turn. But, instead of regimental medical officers to act as sanitary advisers to the district commanders, a new unit comes into play. This unit is the sanitary company. In the War Establishments of the Expeditionary Force of the British Army this unit is not authorized, but only portions of it, viz.: sanitary sections and squads. But in the War Establishments of the Territorial Force upon which the Canadian War Establishments are to be modelled as far as possible, this unit is laid down, and may, therefore, be described here.

The sanitary company is a highly technical unit of the Army Medical Corps. It consists of five officers and 100 N.C.O.'s and men, divisible into four sections of one officer and 25 N.C.O.'s and men, each divisible into four squads of one N.C.O. and five men. One or more of these companies are allotted to the lines of communication according to requirements, and are distributed along the lines to the various districts and posts by the Inspector-General, advised by the Deputy Director of Medical Services. To small railroad stations and stopping places on convoy routes single squads may be allotted while to large rest camps, and large centres such as cities, sections, or even a whole company, may be detailed. They are placed, under the local commandant, in charge of the sanitary administration of the place, the manual labor being supplied by civilians engaged for the purpose. They form, as it were, the local sanitary authority, and are responsible for the maintenance of such sanitary conveniences as may be required by the passing troops, and for the sanitary policing of their areas. Their authority and scope will of course, depend upon whether the area covered by the lines of communication lies in hostile or friendly country. If in a friendly country, local sanitary authorities continue to exercise their functions, and the military sanitary organizations only supplement the civil inasmuch as will suffice to cope with the extra work caused by the added military population. But as soon as a hostile country is entered, then the military sanitary organization takes full charge.

No special arrangement of the personnel of the sanitary company has yet been authorized, further than the division into sections and squads described, but it is presumed that the personnel of N.C.O.'s and privates must consist of men specially trained as sanitary inspectors, laboratory assistants, disinfectors, and clerks familiar with the clerical work incident to sanitary administration and the investigation of epidemics. The officers, of course, should be highly trained public health experts. A possible development may be the grouping of these various subordinates into separate groups or sections, each with its special technical equipment. For instance, the laboratory group or section might have under its charge an equipment sufficient to establish one large or several small hygiene laboratories. The other groups would be equipped according to their special duties. Such a grouping, each under an officer, would, in my opinion, facilitate the training and flexibility of the unit. For instance, the field training of the laboratory section might with advantage consist largely of packing and unpacking apparatus, moving off on short notice, and setting up its technical workshop under different conditions, as quickly as possible. A similar training would apply to the disinfecting or quarantine section; while the sanitary inspectors' section would be enabled to receive more special instruction in the work of inspection and care of water and sewage plants, and of incinerators; the inspection of abattoirs, of food and milk supplies; the testing of drains and plumbing; and the use of the various apparatus required in these duties. Of course, all the personnel should be familiar with the ordinary duties of sanitary police work, as well as trained in the making and management of all field

sanitary constructions, and the provision of pure water.

A sanitary company organized, equipped and trained along the above lines, would, in my opinion, be capable of taking over the care of a large city or centre, or of distributing its personnel in suitable detachments along the lines of communication covering several contiguous areas. But, however the sanitary company may ultimately be organized in future establishments, whether into specially trained sections as above outlined, or simply generally trained as sanitary inspectors and in water duties, it still will be the responsible executive factor in the maintenance of the sanitation of the areas covered by the lines of communication.

Another new factor of great importance which may be taken up at this point is the Sanitary Inspection Committee which was authorized some three years ago. This committee is to be formed on the mobilization of the troops, and will consist of a combatant officer as president, and a field officer of engineers, and one of the medical corps, as members. The duties of the committee are laid down in detail in "Field Service Regulations, Part II.," and may be described as mainly advisory. They receive their orders from the Commander-in-Chief through the Director of Medical Services. They visit and inspect stations occupied by troops, and by their advice and authority co-ordinate the work not only of the different military branches, but also of the military and civil organizations of the areas occupied in the interests of sanitation. They form a board of reference for the solution of sanitary problems, and initiate such important schemes of general sanitation as may be required. Although concerned with the health of the army as a whole, their sphere of action will necessarily be limited, as a rule, to the areas covered by the lines of communication.

These are the two systems which have been evolved for the maintenance of the health of the troops of the whole army. Different personnels and different training and qualifications are required for each. As may be seen, the manual work of sanitation with the troops in the zone of active operations is performed by the soldiers themselves under the direction of their own officers and non-commissioned officers. The regimental medical officers are only advisory, unless otherwise empowered by their commanding officers. But on the lines of communication the manual work is carried out chiefly by civilian employees under the direction of the personnel of the Army Medical Corps organized into companies, sections or squads as the case may be.

At the front with the marching troops little or no higher technical work can be carried out, and laboratories, like operating-rooms, are left behind on the lines of communication. The regimental medical officer must have a good working knowledge of hygiene and field sanitation, but he is not required to have the knowledge of a specialist. The combatant regimental officer must also have a fair working knowledge of the sanitary care of troops and of field sanitation, as he is the executive officer responsible for the work required. On the lines of communication the conditions are changed. Areas are occupied more or less permanently. Hygiene laboratories are established where higher technical work can be done. More permanent sanitary constructions may be erected, and large and costly installations planned. Large civil centres, with their heterogeneous population and existing sanitary organizations, institutions, and plants may have to be taken over and administered, and civil and military resources co-ordinated. All these duties call for special training along the lines of higher technical and municipal health work. Therefore, the qualifications required of sanitary officers vary with the duties they are called upon to perform.

Before going into the qualifications required for sanitary officers of the Canadian Militia, I will briefly outline the qualifications required of such officers in the British Army and Territorial Force. Every officer of the R.A.M.C. on joining receives a course of two months' duration in the hygiene laboratories of the Royal Army Medical College at Millbank, London, followed by a course in field sanitation at the Army School of Sanitation, Aldershot. The laboratory course is repeated with some additions before an officer takes his promotion examinations for the rank of Major. This training, with the usual field experience obtained at the autumn manœuvres, fits an officer to fulfil the sanitary

duties of a regimental medical officer and to instruct the combatant officers of the unit to which he is attached in field sanitary work. For the positions of specialist sanitary officers to A.M.O.'s and of officers in charge of sanitary sections, further qualifications are needed. For this purpose, when an officer returns to the R. A. M. College for his six months of instruction before taking his examination for promotion to the rank of Major, he may select as his special subject, hygiene, and is given four months of laboratory instruction in addition to the two months' obligatory course. Should he pass this examination, he is given a certificate of specialist sanitary officer, and becomes qualified for the higher positions. Many officers in addition to gaining this certificate take the diploma of public health of one of the British examining bodies.

Besides the above sanitary training and examinations, special classes are held at the Army School of Sanitation at Aldershot, at which combatant officers, N.C.O.'s and men are trained in personal hygiene and field sanitation. These classes train N.C.O.'s and men to perform the duties of the regimental sanitary squads. Similar classes, but with more advanced instruction, are held for N.C.O.'s and privates of the R.A.M.C. to qualify them to act as personnel of the sanitary sections on lines of communication, and of water duties squads attached to combatant units. Classes are also held at various headquarters during the winter season at which combatant officers receive instruction to enable them to pass the examination in sanitation which they must all take before promotion to the rank of Captain. Finally, all combatant officers must lecture to their men in elementary sanitation and hygiene.

In the Territorial Force much dependence is placed for special sanitary knowledge on the municipal health officers of the country, as most of these are in possession of diplomas of public health and are trained laboratory workers. The officers for the sanitary companies and for other specialist appointments will be largely recruited from their ranks.

In the Canadian Militia army sanitation in accordance with modern ideas is a matter of recent growth, and organization along the lines of the British model is as yet incomplete.

Most of the training hitherto has been done at the annual camps of training, and consists of the training of regimental medical officers in the routine work of camp sanitation, under the supervision of the A.M.O. During the last few years a steady improvement has been apparent along these lines. A distinct advance was made when officers of the P.A.M.C. were detailed four years ago to some of the larger camps to act as sanitary officers to the A.M.O.'s. These permanent officers, with their special training, introduced a higher standard of field sanitation and took over the sanitary instruction of the regimental medical officers. They also trained those officers who showed special inclination and aptitude in the more extended work of field sanitary administration. Some of these officers are now available for duty as camp sanitary officers, and with the officers in charge of the sanitary sections attached to field ambulances, mark the rise of the specialist sanitary officer in our militia.

Along with these improvements, an examination in field sanitation was added to the examinations which must be taken by all militia medical officers before promotion to the rank of Major. Similarly, an examination in army sanitary administration is now held before promotion to the rank of Lieutenant-Colonel.

So far all the instruction given in these subjects has been of the nature of lectures by the A.M.O.'s and their sanitary officers, and of practical work in the annual camps. In future, however, special classes will be held at the various military centres during the winter, when instruction in this subject will be given to provisionally appointed lieutenants and to captains prior to the examination for promotion to the rank of major. For the training of specialist sanitary officers for the militia a new departure is now under way. Classes will in future be formed during the winter at the Central Military Laboratory of Hygiene at Ottawa, where a few officers at a time will be trained in the work of water and food analysis and the principles of field sanitation. Classes will also be formed at this laboratory for the instruction of field medical officers in army sanitary administration before taking the promotion

examinations for the rank of Lieutenant-Colonel.

It is hoped that many officers will avail themselves of the opportunity of taking these classes, so as to fit themselves to perform the duties of camp sanitary officers and of officers in charge of the sanitary sections of field ambulances. These are, as yet, the only sanitary positions in the militia calling for specialist sanitary knowledge; but, doubtless, in time, as the units peculiar to the lines of communication are authorized, sanitary companies will be organized, and these will call for a further supply of such officers. The duration of the classes and the extent of instruction will depend upon the time which each officer can afford to expend, as it is not considered advisable at present to make any hard and fast rules, nor to exact any special qualifications. But it is hoped that all officers of the A.M.C. who have special civil experience, such as medical health officers, will interest themselves in this new development of our service and by applying for a course at the Central Military Laboratory learn to apply their special civil knowledge to military requirements, and so become available for vacancies as they occur.

Nothing has so far been said about the training and qualifications of the officers of the Permanent Army Medical Corps, as this corps would, like the other branches of the Permanent Force, cease to exist as a separate corps on mobilization and become merged in the Active Militia. It is sufficient to say that the qualifications exacted of the officers of the P.A.M.C. are similar to those required for the officers of the R.A.M.C. All must follow a laboratory course in hygiene, while ample opportunities of acquiring experience in field sanitation is afforded by the routine work at the annual camps of training of the active militia throughout the country, and at the summer training camps of the Permanent Force at Petawawa and McNab's Island, Halifax.

The laboratory course up to the present has been carried out at the Hygiene Laboratories of McGill University, Montreal, under the instruction of Prof. T. A. Starkey, M.D., D.P.H. (London).

In future, however, this course will be given at the Central Military Laboratory of Hygiene. Officers showing special aptitude in this work are detailed, as the exigencies of the service allow, to take the course leading to the diploma of Public Health at McGill University, and so become qualified as specialist sanitary officers, in accordance with the standard laid down for similar officers in the British Army.

The above training qualifies the officers of the P. A. M. C. to fulfil their role of instructors to their confreres of the active militia. But it is not, of course, contemplated that the qualifications exacted of the militia officers shall be of so high a standard. Dependence will have to be placed in a great measure, as in the Territorial Force, upon the civil experience of the A.M.C. officers appointed to the higher sanitary positions, supplemented by such training as has been outlined above, in camp, and at the Central Military Laboratory of Hygiene at Ottawa.

SANATORIAL TREATMENT OF TUBERCULOSIS

By A. P. REID, M.D., Provincial Health Officer for Nova Scotia.

Let us analyze the subject and find just where we stand—it is generally conceded that tuberculosis is not only curable, if taken in time, but easily handled, as 90 per cent. of those who die from all other causes have had this disease, got well of it, and never knew they had it.

Hence the swollen death rate of tuberculosis must come from the 10 per cent. of afflicted who from varied causes have drifted beyond the 90 per cent. line, and our object should be to secure them before reaching this line—to get them in the very early stage, before they get sick, before inroad is made on the constitution, before they are likely to consult a medical man—for at this stage they may have crossed the danger line.

Read at Meeting of Maritime Medical Association, held in Halifax, N.S., July, 1911.

That this is quite practicable this paper is designed to demonstrate, and it will show, if honestly and diligently followed, that no one should cross the 90 per cent. line. The extinction of tuberculosis in the near future is more than a possibility, and this can be obtained at no cost for medicine — sickness, nursing, hospital care — nor loss of time from productive labor. We must keep all the afflicted within the 90 per cent. line.

This will take money, brains and assiduous attention to duty on the part of health officials in contending with the many and varied conditions by which the hapless 10 per cent. have been forced to succumb—for they furnish one-seventh of all deaths from all causes—with all the expense, pain and misery that this implies.

So varied are the local conditions that the means employed must be elastic. The one principle must be kept in view in every case—so arrange that the 10 per cent. do not pass the 90 per cent. line, by furnishing them at a sufficiently early date with anything that may be needed in the way of medicine, care, etc., while at the same time the great majority can still be employed at their usual productive labor, live in their own houses, support their families, and carry on their business and get well (to use a bull) without getting sick.

The above statements, without detailed consideration, look not unlike a fanciful conception, but we shall get down to the hard facts by analyzing some of the conditions that present themselves for consideration:

1. There are in the earlier stages no definite symptoms that would warn the patient of his condition and make him or her resort to aid at the period when this can be most effectively given; and this explains why the afflicted cross the danger line. The tubercle bacillus bores its way through the tissues and lungs and not unfrequently does irreparable damage before causing alarm. Tuberculosis is a sneaking, insiduous malady.

2. Difficulty of early diagnosis; for ill health with more or less debility, with or without cough, are common symptoms of many diseases, and as it is human to hope for the best, delay is to be expected, so that the time when cure is certain is allowed to drift by without making efficient, or, in fact, any effort.

3. The afflicted are the producing class in the prime of age (and they should be in the prime of health), the bread winners and home makers, and as the necessities of the day demand their attention, ill-health, unless of extra severe type, does not intrude on the patient's everyday work.

4. When arrived at the stage interfering with labor, the doctor is consulted and the dread intelligence is conveyed. Then a host of obstacles present themselves, which vary with the individual: (Let us assume there is sanitorial accommodation.)

(a) The want of means to pay for care, and meanwhile the support of family or dependents, or carrying on of business.

(b) If assistance be available, there is objection to the "forma pauperis," as a rule the consumptives do not belong to the mendicant or non-producing classes.

(c) Too often it is crowded hospitals and sanitaria and no room.

5. The patient may know his workshop or office is unhealthy, or his domicile defective, but be powerless to correct it, as he must "hold down his job and grin and bear it," as complaint might mean dismissal, with all that that implies—or his means will not afford a desirable residence, or he is in debt to his landlord. Were there competent Government health inspection this could be eliminated, for the inspector, being independent of employer or landlord, would be in a position to insist on sanitary conditions.

6. When the patient leaves his home for the sanitarium he leaves behind him the seeds of disease in the house, or mayhap in some of the inmates.

7. The recovered patient still needs watchful care in case of recrudescence, that he cannot see nor feel.

8. Tuberculosis is a house disease; here the bacillus harbors in the building or its inmates, or both, too often favored by unsanitary conditions which prepare the way for its propagation, when a tubercle carrier (a visitor perhaps) distributes the germs.

It will be noted in the foregoing that only the salient points against which we must contend have been referred to, but they suffice to include the rest.

To contend with this disease the sanatorium has been introduced as a prime factor in the contest. That it is not only a

very great convenience and, as well, a most valuable aid to those in a position to utilize it, there can be no question, but to the vast majority requiring aid it must be a "terra incognita."

When that model scientist, the late Dr. Koch, discovered the tubercle bacillus, and the late much maligned Dr. Brehmer demonstrated the uselessness of medicine as a curative agent, and at the same time the success of hygienic measures, our ideas on tuberculosis underwent a complete revolution.

The comparative success that was associated with sanatorial treatment captured the laity as well as the profession, and in common with others, I assumed that the sanatarium could be made the grave of the tubercle bacillus.

Experience, however, has disclosed inherent defects in its present method of installation which militate against its success.

Since the establishment of sanataria the tuberculosis death rate has diminished, no doubt partly due to them, but also to the great awakening of the general public to the advantages of fresh air, diet, rest, appropriate exercise and other hygienic aids which will cure the incipient and even the cases not too far advanced. All of these conditions have no doubt had their influence in promoting the falling death rate.

In dealing, however, with the sanatarium let us consider the disabilities under which these institutions labor, many of which are not remediable and must lead to their failure to accomplish what it is assumed they can encompass. Put it in other words—their role is very limited as regards the extinction of the disease or the cure of a very large percentage of the afflicted (explained infra) even were the cost not considered.

The disabilities are:

1. A sanatarium is expensive to construct (as now in vogue) and its administration also costly.

2. For one who can be accommodated, hundreds need aid. An expert on this subject estimated that there are not less than 5,000 or 6,000 seriously affected in Nova Scotia, and the majority of them either at present, or in the near future, require aid; and to furnish this on the sanatorial plan of treatment needs but mention to disclose its impracticability.

3. It is not easy to get the cost per patient below $10 per week, which, added to the interest on the cost of the building, means a charge of say from $15 to $20 per week that must be paid by the individual or by the community.

4. A patient cannot assist in his own support unless in the form of a cash contribution. This is an impossibility with the vast majority who might contribute in kind were facilities furnished.

5. Incipient cases are but rarely bedridden and would be better in every way if engaged in the support of self or dependents, or in useful or wage-earning employment, and it is quite apparent that the facilities for this can never be a feature of sanatorial life.

6. Institutional treatment is not necessary, for 90 per cent. of the afflicted get well without knowing it or making any special effort, while at the same time engaged in their usual avocations. The remaining 10 per cent. could recover in the same way at their own homes and usual employment if common sense and scientific treatment were adopted in time, while in their own homes, before their sickness was such as to require them to leave off their employment. This is exemplified by the Dr. Phillips' dispensary system in Edinburgh, and Dr. Dixon's method in Pennsylvania; the lines they use must be followed to secure success.

7. By adopting this preventative treatment there would in a short time be no advanced cases to require treatment in hospital or otherwise, because those now existing would either have recovered or passed "ad majores iis" and tubercle carries being reduced to a minimum, ere many years tuberculosis would be locally extinct unless reintroduced.

8. The strongest argument against the sanatarium on lines now in vogue is that it contemplates a permanent fixture in our social economy — the removal of diseased persons for cure (at no small expense) while leaving behind in the house from which the patient emerged a tainted domicile with more than probably tainted inmates to furnish a future supply for the sanatarium. Unless a radical change in principle be adopted the disease would continue to be reproduced at the numerous foci scattered over the country, and there is no probable end to this programme.

Read between the lines, there is material

for a volume on this subject—we need not pursue it further.

What is the solution of the question?

There are two classes to be considered: the residents in towns and those in country districts. It is to the latter I will now specially refer, the others to be taken up later.

We must make every residence a sanatorium and every factory, office or workshop must be conducted on sanitary lines, and this is not only feasible, but the expense may be comparatively trivial. Have it so arranged that fresh air shall enter every house, night as well as day, winter as well as summer, all the time. The drainage, as well as ventilation, needs close attention; the cleanliness of the house from dust and filth accumulation must be insisted on, and nutritious and good food must be available, and there you have it.

The air costs nothing and every house can now be (so-called) cleaned, and this should not entail much extra expense; and nutritious diet is or should be the rule. A sanitorium, no matter what its cost, can not furnish more towards the patient's care and cure. These three requirements being furnished, the house construction is purely a matter of convenience; it may be the canvas tent, log shack, or stately mansion, with the greatest difficulties to be solved in the construction of the mansion.

So little being needed, why are things as they are? The answer is easily given —carelessness, ignorance and prejudice.

The question thus resolves itself into the best means to dispel carelessness, ignorance and prejudice. We have the schoolhouse for the rising generation, the church, with its facilities for instruction in this as well as its ordinary work; instructive literature that should be in every one's hands; special lectures and demonstrations at all centres where people congregate, and the press in all its branches.

Theoretically, these should be enough to achieve results. We have them all now more or less in evidence, but practically we are as we are, because the school has more to do now than it can handle, the church is in much the same position, literature cannot get in its work, for the masses are not interested in science nor in that which is not exciting or demonstrative nor possessing the fascinations of the dime novel; special lectures and demonstrations have not the magic about them that politics or religion has to congregate and sway the masses.

Aside from all this, we must recognize the fact that the bread winner and home maker are the persons we specially wish to interview, and they are apt to be too tired after the day's work or too interested in some necessary duty to desire to leave their house; and so they give the go by to the lectures and demonstrations. The press appears to regard the matter from an academic point of view. Could not every newspaper and magazine have a short advertisement in prominent type on its front page, continually, such as "Fresh air, freedom from filth, pure food, mean health and life." Its continuous presence would gradually permeate the unthinking masses.

Are there no ways to overcome such hindrances? There are, but we must utilize some of the peculiarities of human nature. Foremost and most necessary of all, we must make a direct individual appeal, adopt the role of the commercial salesman who is successful through the influence of personal contact.

In this way he eliminates carelessness, educates ignorance, and satisfies prejudice. We can listen with interest or equanimity at disclosures relating to our neighbours, and readily concede that the fault lies with the other fellow, but if we are directly cornered and our defects pointed out things present a very different aspect.

Hence to summarize:

We must have capable persons as interviewers.

A capable Health Inspector (male or female) must visit personally every house—directly point out defects and advise the remedial measure to be taken, and finally see that it is done. If the person has not the means to follow the advice, the inspector should be in a position to supplement.

While examining surroundings, he or she would note the conditions as to health, if there be visible contagious disease, or any of the residents be weakly or in failing health, or has a cough, or weakly from any cause, as old age, defective nourishment, etc. All these should be reported to the Medical Health Officer of the district. Owing to circumstances these visits would need to be repeated to insure that sanitary requirements be complied with, and the instructions of the Health Officer be carried out.

The monthly report to the Health Officer (or oftener if required) would comprise the duties devolving upon the Inspector.

By the exercise of common sense, kindliness of manner and tact, the visits would be appreciated; for it would readily be seen that the good of the household was the only thing considered.

In this way carelessness would be jolted out of its self-satisfying rut, ignorance dispelled, and prejudice eliminated. Let the Inspector adopt the tactics of the mercantile canvasser and success is certain, as there is no demand for money, no tax, no bonus for the adviser, and only the benefit of the persons visited considered, and, if required, aided.

A Medical Health Officer would be required for every district who would report to the Government direct or to a local Health Board, if so designed.

It would be his duty to receive and verify the report of the Inspectors and be guided accordingly. He would be responsible for the proper performance of their duties and have their appointment or dismissal.

The question of diagnosis would be of secondary moment, his medical knowledge would point out the means to be adopted to correct insanitary conditions or revive failing health, for the hygienic methods that cure tuberculosis are equally required in any case of disease. He at once could decide if segregation or quarantine be required, or if surgical or special medical aid be needed and advise accordingly, and if his instructions be not carried out report to the Department of Health. He need not personally take care of the patients, as they may have their preferred medical adviser, but he would see that proper care was given, and in case of inability on the part of the patient, he would be in a position to supplement any deficiency.

He should report quarterly or oftener to the Health Department, and here unless otherwise instructed, his duties are ended.

In this way tuberculosis or any other disease would be prevented at its inception. Every house would be, as it should, a sanatorium, and all the expense would lie in supplementing what would be needed and supervising details not necessarily expensive.

The home-maker and bread-winner need not quit their occupations, unless in severe illness, and the sick or weakly might get well before serious indisposition incapacitates them.

It may be assumed that the visits above outlined would be received with suspicion, coolness or objection as an unwarranted intrusion on the privacy of the home, but the experience of Edinburgh, New York, Chicago and Pennsylvania, as well as that of the Anti-Tuberculosis League of Halifax, wherever the lines of the dispensary system have been followed, would negative any such conclusion. The Inspectors' visits are looked on as a boon, as they come to advise and to aid, use no threats nor force of any kind, and are solely actuated by the desire to benefit those who are in need of advice or assistance. Hence objection or indifference is most unlikely to present itself, as the sick are more than anxious to adopt any means in their power for the alleviation of their ailments once they are aware of what is required, and will accept the ministration of the Inspector in the spirit in which it is given.

Thus in a threatened forest fire, to resort to simile, we might convey all the burning embers to a place where they could be harmlessly burnt out or quenched. This is the principle the sanatorium now acts on — or we might quench every small fire before it reached large proportions, and watch each closely to prevent smouldering embers from again lighting up. This is the principle we propose should be adopted, and where circumstances would be improved by the sanatorium principle, let it be utilized.

The preferable plan is self-evident in tuberculosis; removing the patient leaves embers behind that portend future trouble. These exist in the house (which can with difficulty be properly disinfected), or too often in a latent or incipient form in its inmates, and in no way can the sanatorium method overcome these difficulties.

The proposed plan would keep tab on every house and inmate and, while preventing serious outbreak, would restore the afflicted to health at a minimum of expense and inconvenience.

In the sanatorium there is a cost of $10 to $20 a week (borne by some one) per patient.. By caring for him at his own home, this sum (outside of the cost of

supervision) would relieve a vastly greater number, as the patient can aid in his own support. At the same time we are getting every case in its incipient or curable form and so keeping them within the 90 per cent. line, above referred to. Also in other ways the patients would be benefitted, they could assist directly in their own cure, keep up their employment and income, live in and care for their own homes and dependents, and get the exercise and interest in their own welfare that has so much to do with recovery.

Recurring to the disabilities of the sanatorium (supra), we can here greatly eliminate them—the cost of construction and operation, the accommodation for the many requiring aid—the cost per patient weekly not only being much less but nearly, if not wholly, furnished in kind; while with notification and diagnosis now practically unattainable, the certainty of capturing incipient cases in time, and, as a finale, the gradual extinction of the disease would be advanced.

Let us shortly direct attention to the vastness of this subject.

The victims of this disease are those in the prime of life, at the most productive period of their career. They are the brain and brawn of the country, the *vis viva* of all our active industries, be they educational, professional, mechanical or productive as in agriculture, the fisheries, the mines, or the intelligence and energy of our business men.

Our statistics inform us of 1,000 deaths in the year from this cause alone, not incapacitated for a time, but absolutely rubbed out (and this every year) among our brightest and best in every walk of life.

The thought is appalling and more than regrettable, almost criminal, because avoidable. In addition, we have loss of time and expense of sickness of some 5,000 or 6,000, not fatal, but slowly moving in that direction, to furnish the yearly quota of 1,000, and to all this added nervous strain, pain and worry, and this without present prospect of an end.

This is all due to an infinitesimal entity, microbes that we cannot see except by the expert microscopic eye.

Were they legions of soldiers or armed armadas our last man and last dollar would be available to stay their progress, and yet all the soldiers and armadas of all time have not caused one per cent. of the destruction of human life, expense, pain and worry that this infinitesimal entity has continuously caused from the earliest dates of history, and so it will continue to do unless our lines of attacking it are made more direct.

Before we knew what it was or its vital properties we were fighting in the dark with little or no success; now we know enough about it to control it, if we will, but it will cost money, enthusiasm and energy.

The criminal and insane are provided for, the tramps and "hoboes" look after themselves. The latter's principal danger is crushing by the railway cars while negotiating free excursion trips. I never heard of one suffering from tuberculosis. Their open air life protects them, and they rarely have other disease except by accident or infection. If the dietary be irregular, and as it is not apt to be too stimulating, it in so far corresponds with his exertions, which are similar in type. "Nolens volens" he carries out these fundamental laws of health: fresh air, food in proportion to exercise and sparing in character.

In towns and cities conditions vary, and the place must be modified accordingly, owing to density and number of population and their methods of work and living.

The sanatorium or its equivalent would be a most necessary adjunct to care for the advanced cases that now receive but scant attention, and as well to look after those whose domiciles can not be utilized for the home treatment.

The experience of the Phillips' dispensary system in Edinburgh, and that of Dr. Dixon, State Medical Health Officer of Pennsylvania, show how much, even in large cities, can be accomplished by a systematic and scientific treatment of the poorer classes of the population at their own homes. The Anti-Tuberculosis League in Halifax, working on similar lines, have similar results, though badly hampered by want of funds. A few private individuals are trying to do the work that the community as a whole should do.

This subject is too large for proper treatment in a short paper, and here, and now, it would be too cumbersome to elaborate. Sanatoria in the vicinity of towns and cities are necessary, but they should be of cheap construction so as in a few years to

be disinfected by cremation—the tubercle bacillus is a lurker in dust and corners, and no home can be built without some hiding places that careful disinfection is not always able to cover, and cremation is the most reliable disinfectant.

How can we secure these practical details? We can get all the elements necessary except the finances, and there can be no question but these will be available as soon as the people and their voice — the Government — have resolved to obtain them. Schools, colleges and roads we could live without, as our forefathers did, but when the people wanted them, their executive, the Government showed wonderful energy and success in carrying out the popular wish.

If disease breaks out in the sheep, cattle, equine or swine population, funds and the intervention of the Government are available for its suppression. There is no error in this, but the same methods should go farther, and include the human population.

Where mankind is the subject (unless exceptionally) the expense and management are delegated to the municipal authorities, who are hampered by limited means as well as the desire for economy. We have a code of laws (good as far as they go) that are quietly ignored, partly through indifference, partly through ignorance, and partly because they may touch on the interest of influential parties. The finances required to carry out the Public Health Act must be furnished by the locality through its council, and the chief object of the councils (as is to be expected) is to cut down the taxation; and public health for want of influential friends too often must step aside. A new street, road, sewer or public utility, gets aid more or less; these have active friends to see them through, and (perhaps in modified form) through they go. Imagine not for a moment that I imply graft or questionable expenditure, for as a rule I think this is rare, and the councils act up to their light — the strongest and loudest-mouthed applicant gets ahead, and public health, having only the low, small voice of the statute book, with no one to call forth its strength, must take what may fall to it.

There is no efficient system of management always and at once available, and but limited knowledge of the best means of procedure.

We must have in the control and management of the Health Department the Government, with its financial and legislative strength and influence, with efficient local Health Boards appointed by the Government and under its sole control. Those we now have (appointed by the municipal councils or the town council) are, as a rule, perfunctory, and their object, to steer clear of public health or put it out of the way as much as possible. The history of smallpox is an illuminating example. In Germany the Government took the matter in hand and it was soon eliminated. All over America and in many other countries it has a foothold, and so will it continue to hold its own along present lines of mismanagement.

Assuming that the Government takes the matter in hand, let us estimate what the cost would be to carry out the system proposed in Nova Scotia.

This can only be an approximation, but we can approach it closely. We have two cities, 33 towns, and 18 counties. Leaving out the two cities, that now have their special laws, let us assume that the Health Officers of the towns receive annually $500, and in the counties $1,000 (owing to larger area), and that Inspectors receive $400 in the towns and $500 in the counties — these sums in allottment would be modified by the area and population of the districts, but we may assume these charges to approximate the expense.

Health officers, $1,000 each per year for 19 counties	$18,000
Health officers, $500 each per year for 33 towns	16,500
Health inspectors, $500 each per year for 18 counties	9,000
Health inspectors, $400 each per year for 33 towns	13,200
Annual official expense	$56,700

The cost of vaccination, disinfection, medical and other relief for the poor of municipalities and towns are now provided for by statute, but had better come under the one management.

To give a margin for probabilities, let an appropriation of $100,000 be made in the interest of public health, even if other appropriations were lowered pro rata to make this amount available.

The Government, which has supreme authority, could take up the management of public health funds and institute and enforce a general and precise system throughout the Province. New legislation would be needed to define details which are now more general than specific.

I do not think it can be justly contended that the outline given here is beyond our powers of attainment, and this the more as the cost would diminish as sickness and the loss of productive labor would diminish, with the result that the people, being better off, could easier support the expense.

Looked at from a purely utilitarian point of view, it would place or leave millions of dollars annually in the pockets of our people, while abolishing much of the suffering, worry and expense, and the not infrequent cases of insanity and suicide that follow in the tracks of preventible diseases.

The plan above given is best calculated to obtain the desired result, but it may be modified by requiring contributions from each town and county, provided that the control thereof be removed from municipal authority, for, as a rule, it has been a failure, and as the causes producing this are, and will continue, in evidence, there are but little hopes of any improvement in the work as carried out on present lines.

The criticism may present itself that my contentions lean towards Socialism. They do, but not to that type that assumes a common treasury to which everyone contributes his work and energy, and has the right of support all the time, as well as in time of sickness, accident or old age — a beautiful dream, but it must fail owing to the frailties of human nature. We are nearly all inclined to follow the path of least resistance; in other words: "Do as little as we can, and get as much as we can for it."

Another type of Socialism is society, so called, that is selective and swings on the question of who's who.

In fact, the types of Socialism are as varied as there are common lines of work or pleasure.

The Socialism I contend for is the one indicated in the Holy Scriptures: "The poor ye have always with you," and they should receive Christian care as well as recognition; care in sickness, accident or poverty of those who fall by the wayside, tersely indicated by the expression "Luck has gone against them"—the kind of Socialism now being tentatively introduced by many countries, notably Germany and England, now being more elaborately outlined by that advanced statesman, Mr. Lloyd-George, and as well, favorably considered by our own Dominion and Local Governments — savings banks, annuities, old age pensions, etc., are all points in the same line.

The principle I contend for is that every person, not a criminal, who to the best of his ability fulfils a useful role in life, has made society a debtor to this extent; that where incapacitated by sickness, accident or age, he or she is entitled to the necessaries of life and the best care that circumstances warrant, and that it is not a dole but a debt which is payable when the occasion therefor supervenes.

This is the broad foundation of Christianity as laid down by the Saviour, and will endure while our race lasts.

At present I am only contending for a development of one branch of this humanitarian policy, adequate care of the tuberculous, not only in their interest and that of their families, but fully as much in the interest of the body politic.

We devote large sums for immigration, commendable in itself, but we often get an omnium gatherum of limited value. Why not devote the needed sum for conservation of our resources, the most valuable of which is the saving of the lives of thousands of our people yearly, the life of the country and its choicest inhabitants.

In the pithy words of our late most revered King Edward VII., "If preventable, why not prevent?" and we may also say, if curable, why not cure?

We can do it if we will. Will we?

POVERTY AND SCHOOL CLINICS

By L. HADEN GUEST, M.D., D.P.H.

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The division of children into those who are average, those who show defects, and those who show defects plus poverty, becomes at once important as soon as we attack the problem of treatment. The average children in Council Schools (who are, nevertheless, below the standard of their own possibilities), and the children with defects, may be put aside for the moment; the children with defects plus poverty are an urgent problem demanding instant attention.

Children belonging to the poverty group, as already defined, are the children sprung from the morass of destitution foundations of our civilization. These children come from definitely localised neighborhoods, from particular streets and from special blocks of "model" dwellings. The poverty of destitution and demoralization is spotted over the surface of our towns as concretely as smallpox is spotted over the face of a man sick from this disease. The poverty spots are, however, pits sunk into the face of our cities, mouths of the abyss into which human life and our civilization sink away out of sight of man. And to children coming from the poverty spots, it is no use throwing a box of ointment or a bottle of lotion to cure their diseases, these things make no impression thrown into the abyss.

A mother equipped with patience, the desire of cleanliness, and the wish for health, may get some good out of a hospital out-patient department, even if the interview, accorded by the doctor, after hours of waiting, be very brief. The mother, from the demoralized poverty spot, even if she arrives at the hospital, will get usually no help useful to her.

The doctor's point of view needs to be considered. A busy man seeing very many poor patients and giving, frequently the same instructions, and meeting constantly with the same failure to get those instructions adequately carried out, may sometimes get a little hopeless as to the value of his out-patient work.

The advent of a typical slum (poverty spot) mother increases the doctor's feeling of hopelessness ten or twenty-fold. Take a concrete case, that of a child with discharge from the ears. The mother of the case I have in mind is a person with tattered, frowsy, and safety-pinned raiment, conforming generally to the blouse and skirt type, the sleeves are torn to a conveniently free length, the waist is commodiously ample. Neither face nor hands are especially clean, the face is coarse in feature and grinningly amiable. Conversation reveals much surface plausibility, with much genuine and deep-laid inertia. The home is in two or three dark, semi-basement rooms, low, hung with lines on which hang flapping clothes, cumbered with backless chairs, decayed tables, peeling veneer chests of drawers, and iron bedsteads heaped with brownish coverings.

It is wonderful that, faced by the problem of treating the child of such a mother, living in such a home, the doctor may get a little despairing? Treatment which consists partly of syringing out the ears must inevitably fail of being carried out under cleanly conditions (asceptic is pure utopianism). Regularity is not understood, any directions given, except with the most labored simplicity, are not understood. For unexplained reasons such a patient will frequently not attend to see the doctor and report progress. For other unexplained reasons the patient will try "a bottle of medicine" from some private dispensary or from some other public institution. On other occasions the patient will attend in charge of an incompetent person to whom it is useless to give instructions and from whom it is impossible to expect reasonable information. In the particular case the person in charge was often a drunken (sometimes drunk) grandmother, and once or twice a sister a year or two older.

In such cases it may be possible to get parental consent to an operation for re-

moval of tonsils or adenoids. That involves very little trouble to the parents, and is besides by way of being fashionable, and has proved of benefit to neighboring children. But an operation is the first part of the treatment, not the end of the treatment. A child operated upon needs medical supervision and careful training before it may be pronounced cured. And this supervision and training it does not get.

The case cited above is by no means an especially bad case; it may even be thought to belong to the aristocracy of the poverty group. The case is still possible to treat by the united effort of school nurse, school teachers, school doctor, dispensary doctor, with the casual intervention of the clergyman, the district visitor, and a member of the Children's Care Committee. But there are many cases beyond these agencies. There is (I take examples at random as they occur to me from my own experience) the case of the blind woman, a widow, with verminous and ringworm-smitten children. Medical treatment comes and goes, according to the aberrations of the patient, but the conditions persist. To expostulate with such a mother for sewing her child's clothing tightly upon its back is to get a glib explanation (glaringly denied by obvious conditions) that this is done regularly after the equally regular bath. Nevertheless, however glaringly obvious the condition, the cure is not obvious under existing circumstances. To give a complete outfit of clean clothes is no remedy, it has been tried more than once and failed.

Another case is that of a child attending a school for mental defectives. The school nurse noticed the discharging ears, and managed, after considerable trouble with minor arrangements, to get the child specially medically examined. At the examination the mother stated that the child was "under treatment." This, it appeared, meant one attendance in six weeks at a hospital out-patient department, where she was given some lotion and some rapid and half-comprehended instructions. The mother then consented for a special arrangement to be made whereby the child was to be sent from school to a public dispensary every day, in order that the ears might be properly syringed out and attended to by a nurse. The school doctor gave the mother a letter for the school teacher to the effect that the mother agreed to this, to be given to the school teacher by the child. Three days afterwards a teacher called on the dispensary doctor to inquire when treatment might begin, as she had heard about it from the nurse. It then appeared that the letter had not been delivered. Another teacher then visited the child's home and secured the school doctor's letter—"it had been forgotten." After this the child attended at the dispensary most days, but never on Saturdays, when it "minded the baby." As soon as the summer vacation began the child also ceased attending. No doubt by now the ears, which were in a most exceedingly serious and foul condition, are just as bad as they ever were. And the measures taken to get the treatment were all quite independent of numerous official letters and inquiries about the child, involving the labor of clerks and other officials on a fruitless task.

And even when this great, and compared with the results, disproportionate exertion, such a child has been cured of one definite ailment, it very often presents another. Frequently a poverty group child shows more than one defect, often several defects, and the cure of one may leave the other unaffected. And the cure of all definite ailments may still leave the groundwork of anæmia and a debilitated constitution unaffected. To get a poverty group child into a good state of health often involves prolonged, and expensive, treatment, one or more operations, on ear, glands in the neck, tonsils or adenoids, a stay in hospital and at a convalescent home and perhaps a prolonged three to six months' holiday in some country cottage. All of which mean much money and very much expenditure of time and energy.

To continue the present methods of dealing with the poverty group children is to perpetuate the diseases and defects from which they suffer. Nothing but a special organization to meet the special case will be of any great service. What is done at present is of immense help in ameliorating conditions, in easing pain, in keeping the worst conditions from spreading too widely; but what is done at present is costly, cumbrous, involves

great labor, and effects no permanent result.

The special organization required is a school institution for the treatment of disease and for the practical exemplification of hygiene and cleanliness. The clinic must be part of the school organization, otherwise the poverty-group children will not get treated, for the various reasons indicated above. If medical treatment is as much a part of the school work as manual training or housewifery, then it will have a chance to be effective. The educated observavtion of the teacher will be at hand and at the doctor's disposal to supplement the hap-hazard observation of the parent, the report of the school medical inspector and the observation of the school nurse will be available, and the machinery of the school organization, with school nurse, attendance officer, and Children's Care Committee, will be at his disposal for the purpose of carrying out necessary instructions in the home and out of school hours. In a word, instead of endeavoring to treat an ailing child by the agency of half-a-dozen badly co-ordinated or entirely separate institutions with no effective grip anywhere, we shall be treating the same ailment as a part of the school life, with the necessary means entirely at our disposal, and with all the other agencies adequately co-ordinated and properly effective.

All the activities controlled and directed by the Care Committee should be worked in the closest co-operation with the school clinic. This is especially true of the provision of meals for necessitous children, but it is also true of the provision of boots and of clothing and of the arrangement of country holidays.

But the details of organization of the clinic must be left for my next article.

VENTILATION IN SCHOOLS

By W. A. EVANS, M.D., D.P.H., Ex-Health Officer of Chicago

Good air and sunlight are necessary at every age period. Probably this need is never greater than during the school years. From seven to seventeen the body is changing greatly. These are the years of plasticity, and at the same time they are the years in which plasticity begins to give way to crystallizing. It is a bad time for the body to get below par. Habits are being established. Eye accommodation is finding itself; the shape of the lens is being established.

There is some reason for believing that the body is charged with a certain number of potential units. When a certain number have been used, repair is possible. There comes a point beyond which repair cannot be established.

If a child is under strain of eye or brain for ten years in the school-room, the effect may not be seen at once, yet it will figure in the failures of recuperation which are experienced years afterward. Therefore the school years are tremendously important.

The Chicago schools are heated by hot, dry air. In the higher-grade installations the temperature is held at 72 deg. F. The relative humidity is 30. One thousand eight hundred cubic feet of air per pupil per hour is pumped into the room. In the older installations we frequently found the temperature well over 75 deg. F.; that because 1,800 cubic feet per pupil per hour is pumped in the ventilation is as it should be. The assumption is rarely justified.

Many clinical observations have demonstrated that school children do not do well in badly ventilated rooms. Dr. A. W. Schram, of the Graham School, found that such children were prone to infection with the contagious diseases, they had colds, "snuffles," enlarged glands and tonsils. They were mouth breathers; they were pale, flabby, nervous, and subject to headaches. Principal Watt, of the same school, found that they did not learn readily. They were dull and inattentive.

The windows were raised, the air made fresh and moist, the temperature was

lowered to 60 deg. and below, according to the outside temperature. The result was that the children were healthier, freer from colds and infections; the "snuffles" decreased. Besides this the children learned faster and better. The principal, viewing it from the pedagogic standpoint, was more impressed even than the school doctor.

As to light: I am strongly of the opinion that the room should be narrow; that it should not be wider than twice the distance from the top of the window to the floor; that the proportion of floor space to wall space should not exceed one to four; that the windows should be so placed that the light comes from behind or to the sides of the pupils, or, rather, that in looking toward their books, the teacher, or the blackboard, they should not have to look directly at a strong light, or their books should not be shadowed so as to strain the eyes.

These effects can be had in various ways. The teacher can be seated at the back of the rooms, with the students' backs to the teacher; or shades pulling up from below can make a dark background for the pupils, or the teacher can be so placed in the room that the wall furnishes a dark background. Blackboards should be treated in the same way.

Believing, as I do, that the removal of air should be as direct as possible, I believe in low ceilings. Between the ceiling and the heads of the occupants is a volume of warm, foul air, which is being chilled and dropping into the breathing zone all of the time. The less space you have, the less foul air there will be to drop back into the breathing zone. I therefore believe in an eight or nine-foot ceiling. You will get the operators to heat only a certain volume of air and they will heat the same volume whether the ceiling is 8 feet or 12. By taking off the extra 4 feet you increase the amount of air which will be furnished in the breathing zone and that is what counts.

But the principal thing which should interest us is ventilation. The harm which is done by bad air falls into two general groups: The quick-acting or air-borne infections, and the slow-acting or air-caused conditions. Some illustrations of the former are influenza, common colds and cerebro-spinal meningitis, and possibly anterior poliomyelitis, diseases in which the bacteria can be transported considerable distances; pneumonia and tuberculosis, where infections cannot be transported far, and scarlet fever, diphtheria, and measles which can only be transported very short distances.

The causative agents in the first group in the order of their importance are: Bacteria, dust, humidity, heat, organic exhalations and odors; carbon monoxide and carbon dioxide, almost negligible.

The causative factors in the second group in the order of their importance are: Heat, humidity, organic exhalations, carbon dioxide, carbon monoxide, bacteria, dust, odors. These different elements, with the exception of bacteria, have been so thoroughly discussed that I need not discuss them now.

Many efforts have been made to discover pathogenic bacteria in air. In these cultures saprophytes usually overgrow, and the tests are negative for tubercle and the usual pathogenic bacteria. Conclusions that pathogenic bacteria are not spread by air cannot be logically drawn. Efforts to find typhoid in a general water supply which we are certain is spreading typhoid fever are unsuccessful. Efforts to find typhoid in a milk supply proved epidemiologically to be typhoid spreading have proven fruitless. Nevertheless, we do not conclude that there is no typhoid there.

The mouth has been filled with *Bacillus prodigiosus*, and petri plates have been exposed at varying distance, with quiet breathing, talking, coughing, etc. From this it has been concluded that bacteria can be thrown through the air about 20 feet, and the inference is drawn that that is the limit of the danger zone. The air in front of quiet breathers has been found to have fewer bacteria than when the same air was inhaled. The sum total of all of these observations is an idea that bacteria are not air-borne; that they are spread by physical contact. I contend that the inference is unwarranted. Such experiments would have to be impossibly protracted to give results from which conclusions could be drawn.

A person breathes 16 times a minute for 75 years. The absence of pathogenic bacteria from a given cubic yard of air does not prove that there will not be patho-

genic bacteria in some of the other yards of air which the man will breathe in his lifetime. And a man only gets consumption once, scarlet fever and diphtheria once; few get pneumonia more than once. More than that: Let us say that only one man in four gets a tuberculosis infection; that is, a total 300-year period with 16 breath intakes during each minute of 300 years. What conclusion, then, is justified from a determination of the bacteria content of a single cubic yard of air?

Ventilation in schools is necessary for comfort during September and October, and May, June, July, and August in the Chicago climate. In the South we should add April at the front end of the season and November at the rear end. We may say, then, that a study of ventilation resolves itself into a study of ventilation for the months of November, December, January, February, March and April. It is not of much importance during November and April. January and February are the very trying months.

It has been our observation that school air is too hot and too dry. The temperature has ranged from 70 to 80 deg.; the humidity has been 30 to 40. The dust content has not been high. The odors are objectionable in certain schools in the poorer parts of town and in many schools on rainy days.

The Chicago schools are heated and ventilated as one item. The system used is the Waters. The air is taken in about 30 feet above the ground. It is not cleaned. It is heated to about 110 to 130 deg., according to the temperature of the outside air, the velocity and the direction of the wind, and the sunshine. It is discharged into the school-room at a point above the head of the teacher by a large opening. It is discharged under an average velocity of 570 feet per minute. It is exhausted near the floor line and usually on the same wall as the inlet. Eighteen hundred cubic feet per pupil per hour is pumped in.

The theory is that the air, being hot and going at a considerable velocity, will rise to the ceiling and flow across to the opposite wall, where it will fall from wall chill and then flow back along the floor to find its outlet. The system is plenum. Should the system work according to theory, the breathing zone of the children at the desks would be dead, and, therefore, polluted air. As a matter of fact, there are many currents and the air begins dropping to the floor almost as soon as it issues. The children situated back in the room do not get a very good supply of air. Much of the air short-circuits from the inlet to the outlet after travelling a short distance in the room.

What is the remedy proposed?

First.—Reduce the temperature of the rooms to a maximum of 68 deg. This temperature is more bracing. In such a temperature the exhaled air, being hot and moist, will rise right out of the breathing zone and be supplied by purer air.

Second.—Raise the humidity to 60 to 70. No possible objection can be raised to this except that it costs money to evaporate water and the windows will frost when the outside temperature gets to 20 deg. F. and below. The best way to humidify is to introduce a spray of steam into the column of incoming air, if the air is to be pumped in. If the humidity is raised to 60, the pupils will be comfortable with a temperature of 68 deg. F. What is saved on coal, as between 72 and 68 deg., will more than compensate for the steam which is used to humidify.

Some of the frosting of the windows can be prevented by putting a radiator under each window. In certain rare instances a fan throwing enough air against the glass to keep it warm can be used to prevent frosting. But, what harm does frosting do, anyway? Its harm is negligible as compared with the harm of overdry air. It keeps out but little light, and under certain conditions of sunlight will give a mellower, softer light, than the unobstructed pane. If the air is brought into the room through the radiators, it can be humidified by pans of water or by some of the patent humidifiers.

Third.—Blow out the air in the room at stated intervals. This is best done by raising the windows and allowing the air to blow briskly through. A change of the air four times an hour will be effected by currents which are so mild that they will not lift bacteria. In consequence, the bacterial flora of the air neither decreases nor increases unless it is being modified by animal inhabitation. If, however, the wind blows briskly in and out through

windows, the bacterial flora of the air will be reduced 99 per cent. Practically, the way to effect this is to have the teacher throw up the windows when the children go out at recess. When they return they are warm, they have just made heat by exercising. By the time their heat equilibrium has returned to normal the heat equilibrium of the room will have been re-established.

Fourth.—Decrease the dust content of the air of the school-room by having the students at the blackboards use an eraser which is very slightly damp. A piece of cheesecloth fastened over the eraser does well; or the fat can be extracted from an ordinary eraser by ether or naphtha. If the eraser is too moist the board dries slowly.

Fifth.—Introduce the air into the room so as to keep the expired air as much separated from the fresh air as possible. This means direct removal of the air from the breathing zone. This cannot be done if the room is heated and ventilated by the same air. Such air is introduced at 110 to 130 deg. F. If it were introduced near the floor and the outlets were placed near the ceiling the hot air would rush straight from the inlet to the outlet and it would be very difficult to prevent great loss of heat. The only feasible thing to do when heating and ventilation are done with the same air is to put the hot air in high and take it out low. The more rational plan is to have the air enter directly from the outside through holes in the walls; these holes to be closed by adjustable diaphragms. The air should pass directly through radiators and be discharged into the room at such a temperature as to maintain a temperature of 65 to 68 deg.; other radiation to be a hot-water or steam gravity system.

The radiators should have water-evaporating attachments. The air should be introduced in the room at several different points through ducts inside the room, with many openings in the ducts; the exits to be on the inner walls at, in, or near the ceiling; the gathering ducts to lead to the attic with the smallest possible number of turns or angles. In a windy, cold climate, *e.g.*, that of Chicago, the duct should lead to a central large exhaust fan in the attic. In a less cold climate—for example, Cincinnati or Louisville—the ducts can lead directly to the roof and open to the outside, surmounted with one of the perflation devices to accelerate suction and to prevent down draft. The philosophy of this suggestion is that when the weather is not extremely cold, and all bends and turns are eliminated from the exhaust ducts, the fans can be eliminated. In a milder climate, such as that at Memphis, the ducts can be made to discharge from each room directly to the outside air, the outlet being at the ceiling line. In the far south, *e.g.* New Orleans and Mobile, the windows can be used all winter long, both for inlets and outlets, with this single suggestion, that the radiators be so placed that they will come a foot or two higher than the bottom of the window. When in cold weather the window is raised 6 inches or a foot from the bottom, the cold air which enters through the opening will pass through the radiation.

The advantages of such a method over the present method are:

1. The cost of installation will be less than the cost of installation at present employed. The system of ducts is much simpler and the capacity of the fans will be much less.

2. The cost of maintenance will be much less.

(a) On still days the fans will not run at all.

(b) On windy days the fans need only be used to exhaust the air from the rooms on the leeward side. The rooms on the windward side will exhaust without any artificial aid.

(c) The volume of air needed per pupil per hour can be reduced from 2,000 cubic feet per pupil per hour to 1,000 cubic feet per pupil per hour, or even less where the foul air is removed without much admixture with the fresh. In the language of the British Departmental Committee on Ventilation of Factories and Workshops, 1907, "The quantity of air depends on the distribution; and in many cases a relatively small quantity well distributed is far more effective than a large quantity badly distributed."

Editorial

Mortality Rates and Life Insurance.

There are three things, the expense rate, the interest rate, and the mortality rate, of approximately equal importance besides honest and intelligent management, upon which the success of a life insurance company depends. But it has remained for one of this Journal's contributors, Hiram J. Messenger, of Hartford, to convincingly point out to Life Insurance Executives the comparatively inadequate attention hitherto paid to what is admittedly the most important side of the mortality rate problem. As actuary, acting for the Association of Life Insurance Presidents, in investigating the sanitary conditions of American cities, Mr. Messenger has just presented a most thoughtful, scholarly and logical report, supplemented by conclusions to the effect that in all the wonderful development of life insurance during the past 60 years, efforts to secure a favorable mortality have been practically confined to the benefits resulting from a careful initial selection of risks, while the question of what can be done to keep down the claims by efforts to postpone or prevent the death of the insured, after granting the policy, has hardly been given serious consideration.

It is possible to make this field of work of great importance. Life Insurance Executives have the reputation of being shrewd, practical level-headed business men who know their own interests, says Mr. Messenger. Here is an opportunity for them to perform a valuable service for humanity and at the same time directly benefit their own companies and policy-holders. There is no doubt as to the great improvement in the mortality rate of the country during the last half century as a result of progress in sanitary science and its practical application—policy-holders having gained millions of dollars thereby. And possibilities of further improvement in the future are fully equal to that which has already taken place.

It would, however, be a great mistake to attribute this gain to the benefit resulting from an initial selection of risks by medical examiners because a very large part of it is due to a lower mortality resulting from better sanitary conditions for which life insurance companies have very little right to take credit.

To come down to figures, the regular life insurance companies on this continent, exclusive of the industrial business, are paying about $150,300,000 a year for death claims, or about $12 per $1,000 of insurance in force. If the rate were reduced from $12 to $11 per $1,000 of insurance, the companies would gain in reduced claims about $12,500,000 every year. To secure a favorable mortality these companies are now paying about $6,000,000 per year for medical examinations and inspection reports before the risk is accepted, but practically nothing for this purpose after the policy is issued. Yet if they were to expend half as much in a combined effort to lower the mortality rate, probably the result in dollars and cents would be fully as great as results obtained from the money already expended upon initial medical examinations.

The average policy is about $2,500; the average premium about $100. If a company postpones the death of one of these policy-holders for one year it means an advantage to the life prolonged which could scarcely be measured in dollars and cents. To other policy-holders, who in the last analysis pay the death claims, it means that they receive one more premium of $100 and have another year's use of the amount of the claim ($100), making a total of $200 additional receipts as the result of postponing the insured's death for one year. If this could be brought about by the expenditure of $5 or $10 or $25, observes Mr. Messenger, it does not require any unusual acuteness to see that the investment is a good one for policy holders.

What is wanted then is additional co-operation with our Public Health organizations, because such organizations, if given to understand that they would be

thus supported by the life insurance companies, could exert an even greater influence, than at present, in bringing about better hygienic conditions and lengthening the life of the insured.

Inter Alia.

The opinion is becoming generally expressed among those who have investigated the matter that the movement to establish dispensaries in numerous localities is one that offers the best chance of stamping out certain diseases and particularly tuberculosis. The patient in early stages is the one who can be most benefited, and while the admittedly less economical sanitaria have, of course, their uses, they should not be advocated in opposition to local centres of advice and treatment, nor as a superior means of prophylaxis. The watchword of every municipality should be prevention rather than cure, and the lesson should be learned that taxes spent on local education against disease and poverty yield higher returns that any investment in additional uncentralized or isolated institutions which involve the separation of the patient from his family and his work.

In this connection we might mention the Montreal Dispensary, the excellent conduct of which, regarding tuberculosis, lacks only municipal co-operation in order that the work may be followed up outside.

No one can visit this Montreal institution without being impressed with the need of such a dispensary in every community. Since the Montreal Dispensary opening, 17 months ago, there have been over 12,000 consultations; there being splendid co-operation between the hospitals of Montreal and the Dispensary, which is now recognized beyond question as the prime factor in the solution of the tuberculosis problem.

Apropos to Hiram J. Messenger's investigation into the sanitary conditions of cities, the fact is now becoming largely recognized that all unsanitary conditions bring heavy expense: the loss of efficiency which attends sickness is very great. Hitherto, and still in many places, the people winked at the course of prevention, while keeping up the pound expenditure for cure, ordinary appeals having been useless from the fact of existing ignorance with its accompanying conceit, apathy, procrastination and the clutch of the dollar with its attending ideas of false economy. As avarice, ignorance, apathy, procrastination and conceit are recognized sins, is it strange to find them the cause of the sins of unsanitary conditions?

Of all unsanitary sins the unsanitary school-house is by far the worst, resulting as it does, in the injury to defenceless children. The school house which is not thoroughly ventilated with ample ventilating ducts, or which is not thoroughly and properly lighted, or which is not properly warmed nor kept clean or which has not an ample supply of pure water or has abominable out-houses, marks the community in which it exists as ignorant, cruel and extravagant. Such school houses bring insufficiency upon teacher and pupils and inadequate returns for tax expenditures.

The ignorant trustee, whose only idea of economy is to spend less than his predecessor, is a dangerous man. And it is proposed to assist in the dissipation of such ignorance by establishing permanent buildings upon our provincial exhibition grounds, where, during at least two weeks yearly, exhibitions and lectures may be given, demonstrating the result of the opposite policy of expenditure on sanitary works and how finally preventable poverty and disease may be stamped out.

Library and Laboratory

The Public Health.

It is to be regretted that the ideas of the average householder, citizen, trustee, alderman, or mayor, on the public health, are rather vague. They have a general idea of the necessity of drains, of civic cleanliness, of pure water, and there they stop. On the contrary, no municipal building, no legal library, indeed, no doctor's library, should be without a text book on public health.

We are reminded of this by the appearance of a fine text book on public health by Prof. John Glaister, F.R.S.E., of the University of Glasgow, whom a good many of the profession will remember as an honored guest when the British Medical Association met in Toronto in 1906. Prof. Glaister has produced a volume which treats this great subject with a thoroughness, accuracy and scientific interest which will make his book a power.—*E. & S. Livingstone, 15 Teviot Place, Edinburgh, 622 pages; $2.50.*

Egouts et Vidanges, Ordures menageres, Cimetieres.

La destruction des matières usées est un des plus gros problèmes de l'hygiène à l'heure actuelle. Elle est traitée d'une façon remarquable dans le nouveau volume du *Traité d'hygiène* de MM. Chantemesse et Mosny qui vient de paraître. Ce volume est dû à la collaboration de MM. Calmette, directeur de l'Institut Pasteur de Lille, Imbeaux, directeur de service municipal de Nancy, et Pottevin, secrétaire de l'Office international d'hygiène.

Voici un aperçu des matières traitées:

Epuration des eaux d'égout urbaines et industrielles, par le Dr. A. Calmette, directeur de l'Institut Pasteur de Lille: Variations de composition et de débit des eaux d'égout des villes.—Système unitaire et système séparatif. — Composition des eaux résiduaires industrielles. — Conditions déterminant le choix d'un procédé d'épuration. — Inconvénients des procédés de traitement chimique appliqués aux eaux résiduaires urbaines. — La question des boues. — Principes de l'épuration biologique naturelle. — Auto-épuration des cours d'eau. — Epandage. — Irrigation agricole. — Filtration intermittente. — Principes de l'épuration biologique artificielle. — Décantation préalable des eaux d'égout. — Coût comparé des différentes méthodes de traitement des boues. — Elimination par précipitation chimique des matières en suspension dans les égouts. — L'épuration biologique naturelle sur la terre arable. — Utilisation agricole des eaux d'égout. — Epandage agricole à Paris, en France, en Allemagne, en Angleterre. —Frais d'installation des champs d'épandage. — L'épuration biologique artificielle. — Fosses septiques. — Lits bactériens. — Travail et coût comparàs des lits de contact et des lits percolateurs. — Contrôle de l'efficacité de l'épuration. — Méthodes d'analyse. — L'épuration biologique des eaux d'égout dans les riaisons particulières, dans les hôpitaux, les casernes et autres établissements collectifs. — L'épuration biologique artificielle des eaux d'égout en Angleterre, en Allemagne et aux Etats-Unis. — Traitement des eaux résiduaires industrielles. — Législation relative à la protection des cours d'eau. — Le problème de l'épuration des eaux d'égout dans les agglomérations urbaines. — Procédés de choix suivant les circonstances locales.

Evacuation des immondices liquides, égouts et vidanges, par le Dr. Ed. Imbeaux: Eaux ménagères, eaux-vannes, eaux résiduaires industrielles. — Eaux pluviales. — Eaux d'égout. — Procédé d'évacuation. — Procédés statiques ou de conservation des matières. — Puits absorbants. — Fosses fixes à vidange. — Tinettes filtrantes. — Destruction et stérilisation des matières par la chaleur. — Procédés dynamiques ou d'entraînement par l'eau. — Le tout à l'égout. — Système unitaire et système séparatif. — Etablissement et exploitation des égouts. — Mode de construction. — Aération et cheminée de d'aération: désodorisation. — Exploitation des égouts: curage et entretien.

Les ordures ménagères, par le Dr. H. Pottevin: Régime de la collecte. Récipients et véhicules. — Hygiène de la collecte. — Le chiffonnage. — Les récipients et le matériel de transport. — L'évacuation aux décharges. — Le jet à la mer. — L'utilisation agricole. — L'engrais gadoues et son utilisation en général. — Les gadoues broyées: la poudre de gadoue. — Hygiène de l'utilisation agricole. — L'incineration. — Dépenses et recettes. — Hygiène de l'incinération. — Procédés d'utilisation divers. — Fabrication d'agglomérés. — Le système de la collecte séparative. — Application du système en Amérique.

Les Cimetières, par le Dr. H. Pottevin: La destruction des cadavres dans le sol. — Installation des cimetières. — Aménagement du sol. — Sépulture en caveaux. — Dépôts mortuaires. — L'hygiène publique et les cimetières. — La crémation. — Réglementation des sépultures.—*Egouts et Vidanges, Ordures ménagères, Cimetières, par A. Calmette, Imbeaux et Pottevin, 1 vol. gr. in-8 de 568 pages avec 268 figures. Broché: 14 fr.; cart: 15 fr. 50 (Librairie J.-B. Baillière et fils, 19, rue Hautefeuille, à Paris).*

The Canadian Newspaper Directory for 1911.

We have just received from the publishers, A. McKim, Limited, of Montreal and Toronto, a copy of the 1911 Edition of the Canadian Newspaper Directory.

This is the Seventh Edition of this valuable work, which fills a very real need in Canada.

The Canadian Newspaper Directory lists and describes 1,526 periodicals in Canada and Newfoundland. Of these, 136 are daily, 1,102 weekly or semi-weekly, 265 monthly or semi-monthly, and 23 are published less frequently. This is a considerable increase over the last edition.

In addition to this, the Directory supplies a comprehensive Gazetter giving the population, the chief industries, the railway, telegraph and banking facilities and other interesting features of every newspaper city, town and village in Canada.

This work contains over 475 pages. It is splendidly bound and is certainly a credit alike to the publishers and to Canadian newspapers generally.

A. McKim, Limited, are particularly well qualified to edit and publish this, the standard book of reference on Canadian publications. They are the pioneers in the advertising agency field in the Dominion, the McKim Agency having been founded in Montreal in January, 1889, 22 years ago, by Mr. Anson McKim, who is still at the head of the business.—*The Canadian Newspaper Directory for 1911. A. McKim, Limited, Montreal and Toronto, Canada. Price, $2.00.*

Health Hints.

Under the above heading, Edward R. Pritchard, Secretary of the Chicago Department of Health, has produced a book devoted to showing how the menace of urban living may be removed. The author discusses what may be done for the relief of human suffering through governmental agencies. The indifference with which human life has been regarded hitherto on this continent he regards as little short of criminal folly. We spend thousands of dollars a year to rid our hogs of the cholera and leave the humans to shift for themselves.

"The national governments maintain life-saving stations for the rescue of those in danger of drowning. Why is it not just as important that they establish life-saving stations for the rescue of men, women and children from the preventable diseases, such as consumption and typhoid, which are now costing so many lives?

"These life-saving stations should take the form of schools and institutions for the dissemination of knowledge on health subjects and of sanitaria for the treatment of tuberculosis. It is high time our legislators were waking up to the fact that the people are more interested in protecting the public health than they are in the tariff question.

"The chairman of the Ways and Means Committee of the lower house of Congress states that 70 cents out of every dollar of the government revenues are expended to provide for expected wars or to pay the bills for wars that have already taken place. And yet this is a so-called era of peace! Let us see: The navy costs the people, approximately, every year the tidy little sum of $122,000,000, the War Department $95,000,000, and $165,000,000 are spent in payment of pensions. All this vast sum, aggregating $382,000,000, will be expended on account of wars.

"If only the United States Government see its way clear to devote, say 10 per cent. of this vast sum to the stamping out of tuberculosis in this country, and keep it up at the same rate for the next ten years, how much might be accomplished in the saving of human life and in adding to the sum of human health and happiness.

"Last year a certain state legislature appropriated $70,000 for stamping out disease among the domestic animals of the state and $10,000 for the prevention of tuberculosis among the people. And yet in this same state the money cost of consumption amounts to $8,000,000 each year. Other legislative bodies, including even the Congress of the United States, are guilty of the same sort of inconsistency—putting it mildly.

"It is time for the people to demand of their legislative servants that more fitting recognition be given to health matters and more money appropriated for the work of promoting and protecting public health."

Later on, pursuing the same subject, Mr. Pritchard says:

"There is much talk about the tariff, and widely differing opinions on the subject. Without at all attempting to belittle the tariff issue as a question of great national importance, it may safely be asserted that the health of the 90,000,000 of people in this country is of more importance, as a factor in our national power and prosperity, than is the tariff question.

"Consumption alone kills 138,000 people in the United States each year. The estimated cost of loss is placed at $8,000 for each life, making the almost incalculable total of $1,104,000,000 a year. As consumption is one of the diseases responding to sanitary administration, Congress might well hurry up and get through tinkering with the tariff and then study up on health matters a little.

"Having passed a bill providing for the establishment of a state school of sanitary science and public health as a part of Cornell University, New York is blazing the way for its sister states. The purpose of the bill is 'to aid in acquiring practical knowledge and in diffusing useful information on subjects relating to sanitary science and public health and to promote scientific investigation and research respecting the principles and application of sanitary science. Also to train and educate students in all matters pertaining to the public health.'

"Here is an excellent suggestion to all state legislative bodies to follow the lead of New York and see to it that their respective state universities are equipped to maintain schools of the kind that is to be established at Cornell."

Mr. Pritchard's book is minutely subdivided, each topic being treated under a separate head and so simply that nobody can fail to grasp the meaning of his words. Dirt, dust and darkness are the favorite breeding place of germs, he says over and over again. The public health depends upon plenty of air and sunlight, in which disease germs cannot live.

"It is possible," he says, "for a man to live three weeks without food; three days without water, and three minutes without air. This simple statement of a well-known fact should make it very clear that air, fresh, pure air, is the most important element in the world for the sustaining of life. It is also equally important that in order to perform the best labor, to do the best work in any occupation, human beings must be plentifully supplied with pure air.

"It is strange that employers of labor, owners of mills, factories and shops, do not recognize the economy of providing clean, well ventilated rooms for their employes. Perhaps it may be that this side of the problem has never been presented to them. As a rule, when you can show a man how to save money he will 'sit up and take notice.' Show the owner or superintendent of a factory how he can increase the efficiency of his force—that is, get more work out of them without increasing their pay — and he will adopt the suggestion without hesitation.

"There is no question but that a force of employees working under good sanitary conditions as to light, air and general comfort will do much more work and much better work than a like number of employees engaged in the same occupation will perform in a room where the sanitary conditions are bad. A striking instance of this has been furnished by Prof. Winslow of the Boston School of Technology. The tollroom of the New England Telephone and Telegraph Company at Cambridge is long and narrow, with windows only at each end. In winter the employees refused to work with these windows open, and as a result the

air became very foul. The telephone company paid little or no attention to these conditions until it noticed that practically one-half of their working force of 60-odd girls was absent from duty nearly all the time.

"At an expense of not to exceed $100 an air duct was built along the ceiling, opening to the street at the front and discharging fresh air into the room through inch and a quarter holes. Fans were placed at the rear of the room to draw out the foul or vitiated air. A marked improvement in the working conditions was apparent at once. The percentage of absences was reduced to 1.9 per cent. of the entire working force. The girls improved in health and vitality and their work was in every way more satisfactory."

Mr. Pritchard reviews briefly the investigations which have been made into the "overcrowding evil" so common in urban centres.

"It is well understood,' he says, "that rooms that are illy lighted and poorly ventilated are unfit for human habitation, either as dwellings, workshops, or places of business. Quarters of this kind are extremely unhealthful and people who live in them are subject to such diseases as rickets, scrofula, and especially tuberculosis. Children who are reared in places of this kind are puny, pale, sickly — much like a plant that has been reared in similar surroundings.

"Among certain people there is a tendency to flock together, to economize on rents by overcrowding. This is poor economy. The expenses of sickness and death are largely increased, and amount to a great deal more than the savings in rent. It is far better to pay more rent and fewer doctor's bills.

"Insanitary dwellings are found everywhere. Of course, they are more numerous in towns and cities, but it is no uncommon thing to find them even in the rural districts.

"One of the important municipal problems is to correct existing evils in tenement districts. This is done by the enactment and enforcement of laws regulating structural conditions and providing sufficient light and ventilation, but when all this is done it requires separate and distinct legislation to correct evils of overcrowding."

Under the heading "Prevention Counts," Mr. Pritchard sums up some of the conquests which preventive methods have made of the dread scourges of yesterday.

"About ten years ago it was discovered that a certain species of mosquito transmitted yellow fever. Preventive methods were at once vigorously applied, and with the result that this dreaded scourge to human life has practically been wiped out of existence in the United States.

"One hundred years ago there was scarcely a woman in London whose face was not scarred with smallpox, and every year this terrible disease numbered its victims by thousands. To-day, thanks to vaccination, it is unknown in epidemic form and the few cases we have are only those of persons too ignorant or careless to have themselves protected by being vaccinated. Before vaccination was discovered and practiced as it is to-day smallpox killed more soldiers in the army of Europe than were killed by bullets. To-day in the armies of the old world this disease is unknown.

"So you see prevention pays and pays big. Money spent along these lines pays better returns than any other form of investment. If there is any knowledge that we should be eager and glad to get it is the knowledge of how to prevent disease and how to keep well."—*Health Hints, by Edward R. Pritchard; Ridley and Britton Company, Chicago.*

Plumbing and Household Sanitation.

Here is a comprehensive work which proves that, no matter what subject may be chosen, there needs only a writer of authority and enthusiasm to make it interesting. The subject of plumbing might not be thought to afford material for a book of unusual dimensions and of prime importance; but that, perhaps, is because the rank and file of people do not understand what an important part plumbing has to play in relation to the public health, what constant study has been expended upon the subject from early times, what tremendous improvements have been made in the matter of apparatus, how the laws of cities and states have had to take hold of the subject, and how plumbing has become a science rather than a craft.

All of this is what Mr. Putnam has had in mind in preparing his thorough and

careful work. He easily makes it appear that as the homely function of fertilizing the soil is the foundation of the garden in bloom, so the proper methods of making the house sanitary is the first essential in bringing civilization to its flower.

The author writes as a member of the Boston Society of Architects and of the American Institute of Architects. The material offered in his new volume originally served as the basis of a course of lectures delivered in Boston. But a very thorough revision of the original text is apparent, as the material here presented has the quality of the printed word, instead of that of the spoken word.

The problem of bringing pure water to cities and houses and of getting rid of impure water without detriment to health must have been a foremost one in every age of civilization. Mr. Putnam covers a wide canvass in his present study, supplying frequent references to the manner in which the problems indicated were met by the Romans, and by the people of the Middle Ages, down to the present day.

Both sides of the problem are shown. The elegance as well as the crudities of methods which prevailed centuries ago are described, and the highly skilled devices of to-day — together with the occasional failure to profit by even ordinary devices— are set forth in pictures and text.

The relation of what the author calls the "science of modern plumbing" to the other modern sciences of bacteriology and hygiene is shown, from the standpoint of the thorough chemist.

Indeed, the relation between health and plumbing is set forth in a great variety of ways, from studies of microbes to analyses of sewer air.

The illustrations range in subject from the ancient Roman baths to the latest inventions and devices for making the science of modern plumbing economical and hygienic.—"*Plumbing and Household Sanitation,*" *by J. Pickering Putnam.*

Medical Men in the Time of Christ.

To the student of medical history anything is of interest that helps to throw light upon the state of the medical profession in the past; therefore a book such as Medical Men in the Time of Christ, by Dr. Robert N. Willson, of Philadelphia, which contains many details concerning the social and scientific position of the doctor in the early days of the Roman Empire, will be welcomed by a certain section of the reading public. Commencing with an outline of the history of medicine from its earliest beginnings at the dawn of the world (for we are told that "there are many indications that medical knowledge of a primitive type may be traced to the beginning of human existence"), Dr. Willson gives a graphic description of the immense difference which existed in the status of the doctor at different periods and in different parts of the ancient world. Thus, for example, whilst in such countries as Greece, Egypt, or Palestine, the medical profession, possibly on account of its close connection during many centuries with the priesthood, was always regarded with peculiar veneration, in Rome under the Republic, where "the fact that their services commanded an honorarium had relegated the physician and the surgeon to the unpopular class of artisans that strove for money gain," medicine was looked down upon as an occupation fit only for the *Græsulus esuriens,* who, to make matters worse, was usually a slave. It was not until the emancipation of the Greek physicians by Julius Caesar in 49 B.C. that "the medical profession came out of bondage into its own," and for the first time was considered an honorable calling for a free-born citizen of Rome. It is interesting to note that at the time of our Lord's birth the Jewish physicians, afterwards famous throughout the Middle Ages for their knowledge and skill, were already to be found practising in most of the Roman provinces, and, even at that early date, seem to have been greatly esteemed for their learning. They do not appear to have enjoyed a similar reputation for virtue, at any rate amongst their own countrymen, if we are to accept the evidence of the Talmud, where it is gravely stated that whilst "all ass-drivers are wicked, camel-drivers are honest, sailors are pious, physicians are destined for hell." Even the best is doomed to this fate (*Medicorum optimus dignus est Gehenna*). It is possible that at times these amazing sentiments were shared by their Gentile patients, at least if the Hebrew doctors steadfastly adhered to some of the precepts laid down in the Talmud, which taught that an oath sworn to a Gentile was never binding on a Jew, and that it was permissible for

one of the Chosen People "to heal Gentiles only for the sake of the fee, or for the practice of medicine, but it was not allowed to save their lives in seasons of danger."

It is the sidelights on history which are afforded by details such as these that make Dr. Willson's book well worth reading. It is a pity, however, that the author, whose work shows evident signs of a careful study of his subject, has not exercised more discrimination in the handling of his materials, and so avoided a certain amount of confusion in his narrative. This, however, is the only drawback to an otherwise very readable account of the medical profession at a critical period of its development, which derives much additional interest from the finely reproduced photographs with which the volume is illustrated.—*Medical Men in the Time of Christ, by Robert N. Willson, M.D.; published by the Sunday School Times Company, Philadelphia.* 1910. Pp. 157. $1.

Book Announcements, for Later Review.

The Inspection of Fish, Poultry, Game, Fruit, Nuts and Vegetables.—By A. Horace Walker, Sanitary Inspector to the Metropolitan Borough of St. Pancras, Late Instructor and Lecturer to the Essex, Middlesex and Hertfordshire County Councils. Demy 8vo; XII. x 180 pages; 22 illustrations. 5s. net. London: Balliere, Tindall and Cox, 8 Henrietta Street, Convent Garden, 1911.

A Practical Guide in the Preparation of Town Planning Schemes; with maps in Thumb Case—By E. G. Bentley, LL.B.; and S. Pointon Taylor, A.R.I.B.A. (Members of the National Housing Council), with a foreword by Raymond Unwin. Demy 8vo ;160 pages. 5s. net. London: George Philip and Son, Limited, 32 Fleet Street, E.C.

Hygiene for Nurses; Theoretical and Practical.—By Herbert W. G. MacLeod, B.Sc., M.D., M.S. Edin., M.R.C.P. Lond., D.P.H. Lond., D.P.H. Camb. Crown 8vo; 233 pages; 23 illustrations. 3/6 net. London: Smith, Elder and Co., 15 Waterloo Place. 1911.

Antiquated Public Health Legislation.

The decision of the Supreme Court of Massachusetts with reference to the bottling of milk in the city of Boston, the Trenton egg trial and the agitation a year ago or more with reference to beef from cows affected with tuberculosis are quickly recurring evidences of the need of the establishment, first of a new set of definitions, and, second, legislation in health matters of a pattern more in accord with modern knowledge of disease. *The Transcript Clinic* points out that the beef question reduced to its lowest terms was practically, whether local lesions in an animal makes its meat unfit for food; in the Trenton egg case the issue was whether that continual change in all organic bodies called decomposition was in a certain lot of eggs sufficiently advanced to make them unfit for food; and in the milk case, how applicable is the antiquated definition, "nuisance, source of filth and cause of sickness," to the functions of a modern board of health working under the advances in science of the past ten or fifteen years? This question of re-defining words to correspond with the specialization of knowledge is one that the physicians, sanitarians and officials should take up with vigor, in the interests of business men and of public officials, who on the one hand find their interests hampered and on the other, their activities curtailed, by the lack of precise definitions. A shrewd lawyer to-day, if his interests lay that way, might have no difficulty in proving that corns are sufficiently a disease to cause the animal so affected as to be confiscated and perhaps destroyed under the law, while on the other hand, the sanitarian knows that local lesions may in no way affect the food value of the creature, and to no extent, according to the best of the knowledge of to-day, affect the health of the individual consuming the same.

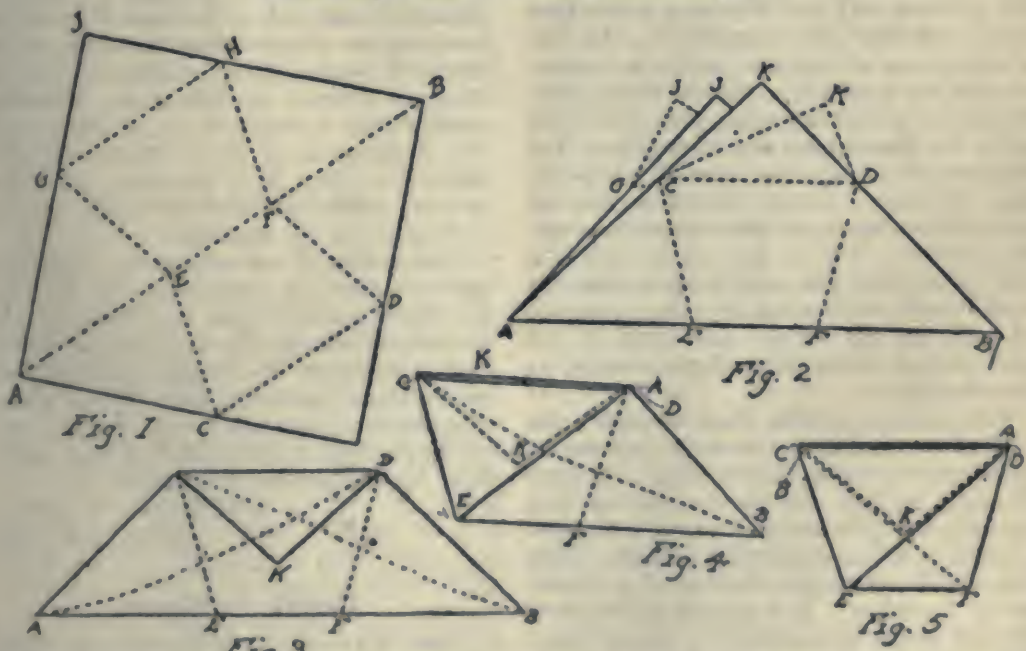
At Trenton it was very evident that new criteria must be established to measure the quality of eggs. The bacterial content, it was shown by evidence, that must have been a surprise to the Governments, is not a standard to be considered for a moment. It was furthermore shown that decomposition is a continuous process, and the same problem occurs in it that has so often puzzled the farmer, who is troubled in determining at what moment the pig becomes a hog. At what stage does the breaking down of organic cells in a food become a process of danger to the consumer of the food? This may usually be determined in

the good old-fashioned rule-of-thumb way, by smelling, and so far as eggs are concerned, there does not to-day exist any more reliable method. It is not fair to assert that no such standard can be established, simply there has been up to now no commercial nor scientific need of the determination. It is time to have the criteria for decomposition determined.

The Milk and Baby Hygiene Association, which has been investigating the subject, views with alarm the extensive use of condensed milk as a food for babies. In a report just issued the Association states that the increasing use is due to the "misleading of consumers by labels and advertisements into the belief that when largely diluted with water condensed milk yields a mixture which closely approximates the composition of milk."

"Mixtures made according to the formulæ suggested would be deficient in practically every instance in percentage of milk constituents as compared with human milk. Furthermore, they contain, or the printed directions suggest the addition of, cane sugar, which is deemed by many physicians an objectionable ingredient. The use of condensed milk for this purpose no doubt often costs infant life, and such use, except on physician's prescription, is to be vigorously condemned. The labels for these packages should bear a warning against the use of the contents as food for babies."

Making the "Cup Sanitary."



Secure a sheet of paper about eight or ten inches square. Fold it in the middle from corner A to corner B (Fig. 1 and 2). Next take the uppermost free corners, J to K, and fold down on each side to about one-third of the distance between top and bottom (Fig. 3). Next take the free corner A and bring it almost to D, and fold the paper at C K (Fig. 4). Then take up the free corner K and insert it into the exposed fold between A and C. Now take the free corner B and bring it to C on the other side of the paper, tucking the free corner J into the exposed fold, D H, on that side (Fig. 5). Open the center, press in the bottom to give the structure rigidity, and fill with water.

Open Mail

To the Editor of the Public Health Journal, State Medicine and Sanitary Review:

"The Simplicity of Modern Medicine."

Sir,—My attention was attracted by the title of a communication in your May number, entitled: "The 'Simplicity of Modern Medicine.'" The writer, "A. D.," gives two very interesting examples of simple surgical procedures, but one is at a loss to know how they can be denominated "medicines." However, simplicity has really reached the domain of medicine, bringing with it a precision in the application of remedies that is of the utmost influence over the treatment of disease.

Time was when the most favored remedy was that which contained the greatest number of drugs. One of these triumphs of the pharmacist has persisted even to the present day — Warburg's tincture, which contains 147 ingredients. In the murky gloom of medieval medicine nothing was known certainly, and the practitioner sought by combining many remedies to hit upon one that might prove curative. The advance of science has carried us to the other extreme. The physician is now expected to recognize the aberration from normal bodily functions, and apply the remedial agent that will exactly restore healthy equilibrium, raising the depressed function or lowering the excited one, until he has secured that exact physiologic balance we term health.

The pursuit of this ideal created a demand for remedies of corresponding exactitude, which, being unvarying in their chemical nature and in the powers they exerted, could be studied scientifically and applied with mathematic precision. This has led to an analysis instead of a synthesis of remedies. The ancient mixture of several drugs is replaced by single remedies, and even these are split up. It has long been known that plant drugs depend for their medicinal value on certain agents, known as active principles to distinguish them from the comparatively inert constituents, woody fibre, gum, sugar, starch, etc. But few plants contain only one active principle. Jaborandi contains six, the yellow jessamine two, henbane two, celandine seventeen, opium twenty-six, and cinchona thirty. No two of these principles exert the same influence, and as they are developed unequally in different plants of the same variety, the medicinal effects vary correspondingly.

Curiously enough, we often find in the same plant agents directly antagonistic. Henbane may put a patient to sleep, or banish sleep absolutely. Jessamine may soothe excited nerves, or irritate them into convulsions. Jaborandi may cause sweating, or dry it up. It is this uncertainty that has paralyzed the arm of the physician in the past, making him timid when he should be bold, spending his time in cautious trials at the beginning of disease, when a strong and well-placed blow might break up the attack before the damage was done. We get in this a glimpse of the advantages secured by this step. Knowing exactly what a drug will do, means a scientific application of it to relieve the condition for which it is adapted. And this in turn means the dawn of a new day for medicine, full of promise.

The matter is so momentous that it is singular that the press, avid for novelty, has not stumbled upon it. But it is exclusively a matter for the physician, and that is probably the reason the public has not awakened to its import. When it does appreciate it, the world may realize some of the good work in its behalf being quietly done by the medical profession.

William F. Waugh,
A. B., A.M., M.D.

Church Ventilation.

Dear Sir:—At a service in one of our city churches a woman fainted and had to be carried out; one of those taking part in the choir nearly collapsed after finishing the part, and the congregation were using song leaflets as fans. These incidents go to make up only a single example

of what may be found in greater or less degree in churches every Sunday as a result of bad air. But, you say, cannot the windows be opened? Certainly, they can; but no sooner is one opened than somebody complains of a "draught," and it is closed again. Air that has been breathed once is a poison, and even though we breathe such air for one hour out of the twenty-four, I believe that breathing pure air the remaining twenty-three hours will not repair the injury done the body. A person who would be horrified at the idea of washing his hands in water in which another had washed makes no protest against breathing air which has been in the lungs not only of healthy persons, but of those suffering from catarrh, tuberculosis and other communicable diseases. And these are the conditions in most of our churches!

What are we going to do about it? The remedy lies partly in the pulpit and partly in the pew and in the installation of proper ventilating fixtures. Those who realize the gravity of the situation are justified in refusing to attend or to support a church which compels them to poison their bodies with foul air. The rest need to be educated on the subject, and this can be done by addresses from the pulpit by physicians.

C. B. R.

Kerosene and the Fly.

Sir,—Some years ago my attention was called to an article in a government report. It was in regard to flies. It stated that by placing a trough along the window on the inside and filling partly full of kerosene, the flies would drop into it. I went to a tinner and had some small troughs made, three-quarters of an inch wide, three-quarters of an inch deep, and about 15 inches long (just about the right length to handle them easily). I placed them on the frame of the window, next to the glass, and filled them about half full of kerosene. There is something about the fumes which seems to daze the flies, and they drop into the trough and are "no more." At a friend's place of business, which is wholesaling fruit and is usually bothered with flies more than most other trades, by using this simple trough, flies, which as you know always go to the windows, have largely diminished. These troughs also keep your window clean, which is a big advantage. J. K.

A Sanitary Suggestion.

Sir,—Will you kindly allow one vitally interested in the summer campaign in Montreal to offer a suggestion through your columns.

The University Settlement in Dorchester street, in true settlement style, is facing the neighborhood problem of healthful living during the heated summer term. The garbage pail offers one of the daily, insistent problems and the residents are impressed with a feeling of neighborhood sympathy for those immediately around in such a congested section — who are blest with even less facility for handling this difficulty.

In every paper, by every public speaker on general sanitation, in the most necessary campaign against wrong conditions and the germ carrying fly, to which is traced general disease and infant mortality, one is urged to the most careful handling of all discarded vegetable and other matter — under crowded conditions, with inadequate or no facility for meeting this difficulty, danger must still be at a maximum.

In the Settlement the plan has been followed of wrapping all garbage carefully in paper bags or disused newspapers. In a western city, where probably the most effective means of handling garbage prevails, this plan has been insistently and generally advocated as the best means of preventing immediate decay and withdrawing temptation and provision from the inevitable fly.

Considering the difficulties under which the majority of summer dwellers in the city are laboring, owing to ignorance of language or lack of intelligent understanding of public appeal, however forcefully made, would it not be possible for the Board of Health to provide small strong paper bags, disinfected if feasible, for daily or weekly distribution through the needy neighborhoods.

With the generous grant for milk stations, with all that public-spirited effort can do in the cause of life, all will be more or less futile unless this all important question is taken up in some practical way.

ELIZABETH HELM.

University Settlement.

Meetings and Reports

DOMESTIC

Timely Regulations of the Provincial Board of Health of Ontario.

The following regulations are made under paragraph 13, of section 13, of the Ontario Public Health Act (amended 1911):

Regulation 1. No garbage, excreta, vegetable nor animal matter nor filth shall be deposited on or in any of the lakes, rivers, streams or other inland waters of the Province of Ontario.

Regulation 2. Residents of health resorts and summer resorts are hereby required to so dispose of their garbage, excreta, manure, vegetable or animal matter or filth that such shall not create a nuisance nor gain entrance to nor pollute any lake, river, stream or other inland water of the Province.

Regulation 3. The owners and officers of boats and other vessels plying upon any lake, river, stream or other inland water of the Province are hereby required to so dispose of the garbage, excreta, manure, vegetable or animal matter or filth upon such boats or vessels that such shall not create a nuisance nor gain entrance to, nor pollute such inland waters.

Regulation 4. Any contravention of the foregoing Regulations shall be subject to the penalties provided by the Public Health Act in respect thereto.

And further desirable Regulations are made under paragraph 14 of section 13, as follows:

Regulation 1. Hotels, restaurants, railway trains and depots, boats, and all other public places which provide a supply of drinking water for the use of the public shall at all times be required to provide that such drinking water shall be pure and wholesome.

Regulation 2. Any contravention of the foregoing Regulation shall be subject to the penalties provided by the Public Health Act in respect thereto.

The National Council of Women.

Possibly no organization is doing more to weave the principle, of doing unto others as you would that they should do unto you, into the social fabric of Canada than the National Council of Women. Their object is the practical one of drawing together the women workers of Canada in greater unity of thought, sympathy and purpose in order to further the application of the Golden Rule to society, custom and law. This object the council seeks to establish chiefly by means of standing committees, composed of a convenor, elected by the National Council, a member being elected by each nationality organized society in federation, and each local council, who in turn is convenor of a similar standing committee in her local council. By this means information as to conditions and needs is gathered from all parts of the country, and public opinion is created that leads to necessary action or to securing legislation when required.

That little is overlooked in the wide sweep of these committees in their inquiry and investigation is manifest from the separate departments, as follows:

Laws for women and children.
Objectionable printed matter.
Custodial care of feeble-minded women.
Care of the aged and infirm poor.
Finance.
Immigration.
The Press Committee.
Agriculture for Women.
Citizenship.
Vacation Schools and Supervised playgrounds.
Suppression of the White Slave Traffic.
Peace and arbitration.
Public health.
Education.

On these various types committees and sub-committees have been assiduously at work during the past year, and much in-

terest was displayed in the reports presented at the annual meeting last month in Port Arthur. Women from all parts of Canada, who devote their time and talents to the cause of womanhood and the betterment of the conditions of the less fortunate members of their sex, were present to discuss the progress of their order since their meeting last year in Halifax, and plan a campaign of legislative, educational and uplift work for the future. Discussions were held with a view to placing the various projects upon such a basis that application might be made to the Provincial Legislatures and the Federal Parliament for the introduction of new laws, or the modification of old laws, in keeping with the progressive aims of the National Council and for the welfare of women and children generally.

There are in Canada 25 Local Councils, each of which was entitled to send six delegates to the convention besides which the many affiliated societies, including the Women's Art Association, the Girls' Friendly Society, the Dominion Order of King's Daughters, and the Victorian Order of Nurses were entitled to two delegates each.

There are National Councils also in the United States, Germany, Sweden, Great Britain, Denmark, the Netherlands, Tasmania, New South Wales, Victoria, South Australia, Queensland, Italy, France, Argentina, Switzerland, Austria, Hungary, Norway, Belgium, Greece and Bulgaria, and representatives in Russia, Finland and Turkey.

These National Councils are federated and form the International Council, which was formed in Washington in 1888, and meets every five years. The first Quinquennial was held in Chicago in 1893, the second in London, England, in 1899, the third in Berlin, Germany, in 1904, and the fourth in Toronto, Canada, in 1909. The executive committee also meets twice between the quinquennial meetings.

The National Council of Women came into existence in 1893, under the auspices of the Countess of Aberdeen, the wife of our then Governor-General, and she became its first president. It was formed on the same lines as the National Council of the United States and the Council of Women Workers of Great Britain, namely, as a federation of women's societies. It represents all the provinces of the Dominion. It is non-political, for women of all parties belong to its ranks. It is not attached to any particular creed, for members of all the Protestant churches and of the Roman Catholic church work together in the Council, as do also the adherents of the Jewish faith.

Twenty-five Local Councils, from Nova Scotia in the extreme east, to Vancouver Island in the extreme west, belong to the federation, and these Local Councils have in affiliation over 300 societies and institutions formed for every conceivable object. Fourteen nationally organized societies, including Women's Institutes, also belong. Once a year representatives meet in one or other of the principal cities of the Dominion to receive reports, to confer on subjects suggested by its executive or by the federated associations, in order to decide on any combined national action that may be deemed desirable, and to recommend lines of work or injuiry by the federated associations in their several provinces.

In this connection, the following part of an address by the late Lady Edgar is of interest:

"The Minister of Education in 1897 stated that the introduction of domestic science and manual training into our schools was entirely due to the efforts of the National Council of Women.

"Not in a spirit of vain-glory, but because I want to inform you as to the aims and work of this council, I will give you a resume of some of its other achievements.

"It has obtained the appointment of women on the Boards of School Trustees, and of women inspectors in the factories and workshops where women are employed, in the Provinces of Quebec and Ontario.

"It has obtained the extension of the provisions of the Factory Act to the Shop Act in Ontario as regards the supervision of women workers.

"It has obtained the appointment of women on the Boards of School Trustees in New Brunswick, and the amendment of the School Act so that they may be elected in British Columbia.

"It has brought about very desirable changes in the arrangements for women prisoners in various places.

"It has organized in several centres Boards of Associated Charities or other

systems of co-operation in the relief of distress.

"It has established hospitals in some of the smaller towns of the Dominion.

"It originated the Victorian Order of Nurses, and has taken a leading part in its establishment.

"It has spread sanitary knowledge, especially by means of Health Talks for mothers, given by physicians in Montreal. Halifax has also done good work in this department. It has also worked for medical inspection in the schools.

"It has held an inquiry all over the country into the circulation of impure literature, and has been able to do something to lessen it already, as well as to warn parents and teachers as to the very great danger that exists in this direction.

"It is also working to supply the youth of the country with good sound books.

"It conducted an inquiry in all the provinces into the laws for the protection of women and children, and laid certain recommendations before the Minister of Justice which he adopted when bringing in amendments to the criminal law.

"Through one of its affiliated societies it is endeavoring to plan for the better care and wiser distribution of women immigrants than has hitherto been possible.

"It is pledged to co-operate with the medical authorities in urging measures to be taken to check the ever-increasing ravages of consumptive diseases in this country.

"It is striving with success, notably in Montreal, Halifax and St. John, for the establishment of vacation schools and supervised playgrounds."

The corresponding secretary of the National Council of Women is Miss Riddell, of Toronto.

Eleventh Annual Convention of the Union of Canadian Municipalities.

W. D. Lighthall, Hon. Sec.-Treas., U. C. M., writes an official circular to all the municipalities of Canada as follows:

"The President and Executive of the Union of Canadian Municipalities, beg to call your attention to the occasion of the Eleventh Annual Convention, which will be held at the City Hall, Quebec, by invitation of His Worship Mayor Drouin, and the Council of the city of Quebec, on the 29th, 30 and 31st of August next.

"You, Mr. Mayor, and as many delegates as your Council desire to send, are cordially invited to attend, and to take part in the proceedings, or present any matter bearing on the welfare of municipalities.

"This is the first time the Union has been convened in the historic and beautiful cradle city of Canada, where a most cordial welcome will be extended to our delegates, and their ladies. Among other topics will be the live questions of: Town Planning and Embellishment; Special Functions of a Provincial Capital; Conservation of Water and Water Powers; Country Roads; Railway Terminals and Crossings; Street Railway Freight Carriers; Pure Food in Cities; Fire Protection.

"Please forward to me, as soon as possible, the names of intending delegates from your Council.

"There are several excellent hotels in Quebec, and you can be assured of good accommodation at reasonable prices. The Chateau Frontenac will be the headquarters of the Executive of the Union.

"A copy of the official programme will be mailed to you about August 1st.

Child Welfare Exhibition.

The death rate among infants and young children has been one of the crying disgraces of civilization. Herod's slaughter of the innocents, the story of which has served to horrify the world for twenty centuries, merely hastened the death of many of those babies, as probably the greater part of those whom his ruthless order condemned would have died within a few years from infantile ailments and zymotic diseases. Through the middle ages and up to the present day, the death rate of infants has had an unknown, but undoubtedly an enormous influence in keeping down the average, while the infant mortality among savages and barbarous nations is too dreadful to contemplate. It has remained for the present generation to realize that "race suicide" as a national peril is not to be compared to "child murder" by removable social and economic causes.

One of the most important problems confronting us is that of child conservation. A movement for the salvation of the child

is of far greater importance than the efforts to save our forests, rivers and mineral deposits from spoliation.. This is so evident that it is necessary only to demonstrate the facts to secure instant public response. Learning from previous efforts that public education and the arousing of public interest must precede all attempts to improve conditions, those behind this most important crusade have wisely inaugurated a system of public exhibits in the larger cities.

The City Improvement League of Montreal recently called a meeting of various bodies interested directly and indirectly in sociology to discuss the idea of holding a Child Welfare Exhibition in that city, following on the lines of that which proved such a success a while ago in New York, Chicago and elsewhere. So cordial was the support of the large number of representatives who answered the call, that it was determined to carry out the idea, and to hold an exhibition in October, 1912. An Executive Committee has been chosen, which is largely representative of the most important societies, and it is hoped that it will be all-Canadian in scope and interest. The Committee is composed as follows:—Presidents, Dr. J. G. Adami (Pres. M. City Impt. League), and T. Gauthier, Esq, (Pres. St. J. Baptiste Soc.). Committee: Prof. Carrick M. Derrick (Pres. Local C. Women); Madame Beique (Pres. La Fed. Nationale); L. Cohen, Esq. (Pres. B. de Hirsch Society); J. C. Walsh, Esq. (Pres. St. Patrick's Soc.); Rufus Smith, Esq. (Sec. Charity Organization Soc.); Dr. L. Gregor; J. V. Desaulniers, Esq.; Dr. Boucher; V. Morin, Esq.; Hon. Secs. Prof. Dale and O. Asselin, Esq.; Active Secretaries: Abbe Morrice and Dr. W. H. Atherton.

Hygienic Co-operation of Windsor.

Health officials of Windsor are uniting with the Detroit Board of Health in a protest against the dredging of the Black River at Port Huron under a United States Government contract. The matter has already been brought to the attention of Canadian health officials at Ottawa by Dr. J. A Ashbaugh, Medical Health Officer of Windsor, who believes the carrying out of the work may result in the pollution of the city's water supply.

A short time ago Dr. Ashbaugh took the matter up with Dr. J. W. S. McCullough, secretary of the Provincial Board of Health, and received a reply advising him to communicate with the Dominion health officials, as the proper authorities to deal with the question.

In a letter to Dr. F. Montizambert, Director-General of Public Health at Ottawa, he recites the fact that at least one epidemic of typhoid has been traced to former dredging of the Black River, and suggests that some representations be made with a view of prtecting public health in the present case.

The Fifth Annual Report Upon Feeble-Minded in Ontario.

Dr. Helen MacMurchy, in her fifth annual report upon the feeble-minded in Ontario, made to the Provincial Secretary and by him made public, is somewhat of a revelation. The feeble-minded, the report points out, are so often irresponsible, and, being subject to trials and temptations peculiarly their own, become a menace, until the chronicler of them has good reason to cry out, "How long, Lord, how long shall these things be?"

The summing up of Dr. MacMurchy is very impressive. Of the school population of Ontario, about 600,000, it is estimated that .03 per cent are feeble-minded. In other words about 1,000 feeble-minded children are in the school, or are supposed to be there. They should be registered, under direction of the Education Department, in order to be known and located. As for the rest, the adults or those out of school, they should be reported to the Secretary's department. Those coming under the notice of the officers of the law should be similarly tabulated.

Finally, there should be a gradual development of this policy of the care of feeble-minded "in accordance with enlightened public opinion in the province." Dr. MacMurchy is to be complimented upon the persistency with which she has prosecuted her work, the importance of which cannot be too often emphasized.

INTERNATIONAL

International Sanitary Meet Set for November.

The Fifth International Sanitary Conference of American countries will be held at Santiago, Chili, November, 1912. The meeting will be under the auspices of the Chilean Government, with Dr. Alexander de Rio as president. Representatives from every American government are expected to attend, when subjects of interest to every nation, including sanitary legislation, social hygiene and the hygiene of sea, tramway and railroad traffic will be discussed.

The International Association of Medical Museums and Congress of Medicine.

At a meeting held recently in the theatre of the Royal College of Surgeons of England for the purpose of extending the membership in the International Association of Medical Museums, Sir Jonathan Hutchinson occupied the chair, and a representative gathering was present.

Sir William Osler, who convened the meeting, stated that the business of the meeting was to receive information from the secretary, and to arrange for a meeting of the Association to be held in London in conjunction with the International Congress of Medicine in 1913.

The Secretary (Dr. Maude Abbott, of Montreal) informed the meeting of the success which had attended the efforts of the Association since its formation in 1906 at Washington, D.C., and stated that its object is the development of a department for the exchange of museum specimens and material for research, the elevation of the medical museum as a teaching medium, and the improvement of methods of museum technique by the discussion of methods. The membership had rapidly increased and included representatives in Africa, Australia and South America, as well as in the principal countries of Europe and North America. The latest step had been the organization of local European centres under the control of corresponding members in France, Germany, Holland and Belgium, and it was desirable, said the secretary, that this step should also be taken in England, in view of the proposed meeting in 1913.

The meeting appointed Dr. Thursfield and Dr. Woodwark, of St. Bartholomew's Hospital, and Dr. Kettle, of the Cancer Research Hospital, as correspondents in London and to act as local secretaries. Resolutions were passed arranging (*a*) that a meeting of the Association be held in London in conjunction with the International Congress of Medicine in 1913, and (*b*) that the three English Medical Societies — the Pathological Society, the Anatomical Society, and the Royal Society of Medicine— should be made cognizant of the actions of the International Association of Medical Museums.

UNITED STATES

Misbranding in the United States.

"Misbranding" is the new word in United States food inspection, made necessary as a result of the present day practices of selling in packages. There are various forms of misbranding under the terms of pure food and drug laws. There are two classes of food violators, including those that are frankly dishonest, and those that mean well but are "up against" prevailing "trade practices." Many of these "trade practices" have been abolished as a result of the food laws. The false and misleading clause as applied to misbranding is more of a stumbling block than any other one thing.

In enforcing the law on misbranding it is necessary to analyze and apply knowledge of principles of nutrition. The terms concentrated and predigested are generally falsely applied, and false claims are made in this connection. False claims have been investigated by government chemists of

breakfast foods and invalid foods, cocoa and coffee, of "brain foods" and specially treated foods.

The actual extent and character of food adulteration at the present day amounts mainly to harmless frauds upon the consumer. Gross old fashioned adulteration is not prevalent in foods, but still is in drugs. Artificial color, as now used, is not deleterious, but stands for sophistication almost always. This is much used in flavoring extracts, including lemon and vanilla. Extracts of manana, strawberry, etc., of this type are worthless. Bottled soda containing such flavors are condemned. Imitation liquors are prepared from fusel oil essences. Under the Taft decision (not endorsed by state officials) such may be sold as whiskey. This decision is proving a great thing for the essence manufacturers.

In the matter of food preservatives, the danger is in cumulative effect (especially on the young and feeble), of daily doses gotten from various woods if artificial preservation is allowed to become general. The referee board's decision on benzoate does not decide. Vinegar, spices and salt are preservative, but they also are foods, the last named being a constituent of the body. Borax and benzoate are drugs and nothing else. Chemical preservatives are unnecessary and the absence of their use is the best guarantee of purity and cleanliness in preparation. Conversely, benzoate was found always by the government in the past year in its "rotten ketchup" prosecutions.

A Pure Milk Report from the Department of Agriculture at Washington.

The Department of Agriculture at Washington has made public a report on the use of the tuberculin test to prevent the transmission of disease through meat and milk. Laws of extremely rigid requirements are recommended for enactment by the states and the nation, not only to the end that bovine tuberculosis may be extirpated, but that the public may be protected from other food supplies carrying with them the danger of infection. Naturally it is the little children who are the first victims of infection through milk, and the saving of their lives is worth all the time and money required to make the tuberculin test universal. Under the best conditions, however, the progress in applying the necessary preventive measures must be slow, and it is important that the public should know the best make-shift measures to employ in the meanwhile.

Director Tonney, of the Municipal Laboratories, of Chicago, recently contributed to the "Journal of the American Medical Association" a valuable discussion of milk and tuberculosis and he classified in the order of their importance the diseases transmitted by milk as follows:—

"First—By far the most deserving of attention is the group of infantile diarrhœal diseases, which are responsible for about one-third of the death rate among children under two years of age in our large cities. As to the bacteriology of these conditions, we have but little satisfactory knowledge, but the evidence furnished by vital statistics is convincing in establishing the important relation of milk thereto.

"Second—Typhoid fever, the relation of which to milk supplies is now well understood.

"Third—Tuberculosis.

"Fourth—Scarlet fever.

"Fifth—Diphtheria.

"Sixth—A group of miscellaneous affections not particularly important in this country, such as cholera, foot and mouth disease, milk sickness and others."

Sanitary regulations in the production and handling of milk will eradicate these various diseases as the tuberculin test will eradicate tuberculosis, but until these regulations, effectively enforced, are secured the safety of the public lies in pasteurization. Dr. Tonney considers compulsory pasteurization practicable for towns and cities, but pending laws to this end private households may do much to protect the health of the little ones.

The idea has been abandoned by the experts that any extreme degree of heat is necessary to destroy the dangerous bacteria in milk. A temperature of 140 degrees Fahrenheit — which is only a trifle too hot to be borne with one's hand—is all that is necessary under proper conditions. The closed nursing bottle filled with fresh milk should be kept in water of this temperature for forty minutes, and this effectively sterilizes the fluid. Methods of pasteurization practiced by some dairymen are useless; such, for example, as heating milk to a high temperature for a few seconds. This is done to keep the milk sweet until it can reach the customer, and an authority

goes so far as to say that milk treated this way should be poured into the gutter.

If parents can get reasonable assurance that their milk from the dairyman is fresh the forty minutes in heated water under the conditions described will make it safe for the children. So far as known this treatment changes neither the taste nor the chemical composition of the milk and it should go without saying that every enlightened physician will agitate publicly for better milk and in his practice urge strongly the sterilization of the baby's food.

A Consideration of Disease and Germs by the Health Commissioner of Rhode Island.

Recently Dr. Charles V. Chapin, health commissioner of Rhode Island, addressed the Harvard medical students on the subject of disease germs and said some things which many would consider radical. "We have learned," he said, "that germs that cause disease do not grow outside the body, except under unusual conditions. Disease germs may be grown in the laboratory with difficulty. They sometimes grow in milk. Only filth that contains excretions of the body is dangerous. These dangerous germs in filth do not grow; they simply remain in it. Their life is generally short. Disease germs do not always cause disease, even when they are growing in the human body.

Dr. Chapin further explained that the idea that disease can be spread by the germs getting on walls, books, clothing, blankets and such things does not get much credence among well informed medical men. "While this is possible," he says, "it is really very rare."

The real menace in the spread of germs he points out as follows:

"The germs of a good many diseases are all found in the mouth or nose, or both. If you will watch even cultivated people, you will see how industrious they are in spreading their saliva where it will come in contact with other persons, and also putting that of other people into their own mouths. The common drinking cup, pencils used in common, pins placed in the mouth and used while moist by dressmakers, transfers held in the mouths by conductors, and sometimes in the mouths of of passengers afterward; people taking hold of straps in street cars that have been held by people who have had their hands in their mouths — all these and many others are common ways of transmission of disease germs from one person to another. If such things are done by the cleanliest of people, what do you suppose the newly arrived immigrants do that sell us fruit on the street? Don't you think there is a good chance of that material being infected?"

The House Fly and the American Civic Association.

"Scientists," writes Richard B. Watrous, Secretary of the American Civic Association, "have been telling us for ten or twelve years that the fly is more than a nuisance to mankind — that it is a dirty little insect in its breeding places and in its habits, a disgrace to our homes, and, worse than all, a positive menace to health. Last year, the American Civic Association undertook to crystallize the growing sentiment against this household pest into a national crusade for its extermination.

"The crusade against the fly must be one of education, and the newspaper and magazine press is the most valuable agency we have for the dissemination of the expert information gleaned from the bureau of entomology of the United States Department of Agriculture and from the leaders in science and medicine.

"Every one admits that the fly is a nuisance, but only a small part of the population knows just what possibilities for the spread of contagious diseases lie in the feet, wings, and head of the fly. When the people are fully awake to the dangers of the fly, they will demand the most stringent regulation of the care and removal of manure, of the screening of fruits, meats and foodstuffs in and about markets and stores, and for the proper screening of homes, offices, hospitals, and all public structures.

"One year's effort along these educational lines has produced splendid results, as evidenced by the intelligent interest now manifested in many parts of the country for getting rid of the fly. The movement has assumed practical lines with definite ends in view.

"Many cities have already passed ordinances governing the care of stables, the care of market booths, and the proper sealing up and disposition of garbage. And

with the constant prodding of the association's efforts, reinforced by the newspaper and magazine press, thousands of communities will take similar preventive measures.

"In our campaign last year we found the 5 and 10 cent theatre an effective educational instrument. Under the direction of the chairman of our fly fighting committee, Edward Hatch, Jr., of New York, a remarkable motion picture film was prepared, depicting in minute detail the life history and habits of the fly. They cannot be called pleasing pictures, but they are wonderfully effective in arousing the observer to return to his home determined to enlist at once in the army of fly swatters.

"Flies enlarged to the size of Plymouth Rocks are displayed nesting in manure piles, and the evolution of the egg through the larvæ and pupæ stages to the adult fly is revealed in a striking manner. The second chapter relates to the life history of the fly, and by quick stage exhibits the fly nibbling and walking over decaying fish and then by rapid flight conveying that filth to the sugar loaf of the dinner table; again, the fly treading in the slime of a cuspidor and from there passing to the nipple of a baby's nursing bottle and depositing that filth, to be taken shortly thereafter into the baby's system.

"That film was exhibited in thousands of motion picture theatres in all parts of the United States before millions of people. Health departments were quick to realize its value as an educational feature.

"We are using through our individual members and affiliated societies that motion picture film together with a series of stereoptican slides illustrating the fly and suggesting ways and means of getting rid of it.

"Organizations of women are taking deep interest through their committees on civic and public health in the warfare against the fly, and are aiding in a remarkable degree the efforts of state, county and city boards of health."

The Civic Association, in a recent bulletin, pays its respects to the fly in this wise:

"He is a frequenter of offal; the fly lays her eggs in the manure pile or other filth. All the germs — all the imaginable, abominable microbes — fasten themselves on the spongy feet of the fly. He brings them into the house and wipes them off his feet. The fly you see walking over the food you are about to eat is covered with filth and germs.

"If there is any dirt in your house or about your premises, or those of your neighbors, he has come from it. It is his home. Watch him as he stands on the lump of sugar, industriously wiping his feet. He is wiping off the disease germs; rubbing them on the sugar that you are going to eat, leaving the poison for you to swallow.

"He wipes his feet on the food that you eat, on the faces and on the lips of your sleeping children. This does more to spread typhoid fever and cholera infantum and other internal diseases than any other cause.

"Disease attacks human beings only when they are brought in contact with it. For instance, you cannot get typhoid fever unless you swallow the germ of typhoid, and you do not swallow these germs unless they get on the food you eat or in the liquids you drink, or on the glasses or cups from which you drink.

"Not only does the fly scatter the seeds of disease from his body over your food, but, before your fruit and vegetables are placed on the table they have been subjected to his filthy habits, either in the kitchen or in the stores.

"Intestinal diseases are more frequent whenever and wherever flies are most abundant, and they, and not the summer heat, are the active agents in its spread."

Indiana Chart Displayed at the American Medical Association Meeting in Los Angeles.

Dr. William King, assistant secretary of the Indiana State Board of Health, has struck a unique idea as an illustration for the board's crusade against kissing the baby. Dr. King has had printed what he calls "baby charts," illustrated on the following page, showing pictures of babies, and on the card is an appeal from the youngsters to the elders to refrain from kissing them. Two posters, both similar in character and purpose, were prepared under Dr. King's direction. One will accompany the board's exhibit and will be sent to various parts of the state, and the other was sent to Los Angeles, Cal., as a part of the Indiana exhibit at the meeting of the American Medical Association, June 26 to 30.

INDIANA
STATE BOARD OF HEALTH
PLEASE DO NOT
KISS ME, I DO NOT WANT
YOUR GERMS. THEY ARE HARMFUL
YOU SHOULD PROTECT ME FROM POSSIBLE
DISEASE AND DEATH

THE EMPIRE AND THE WORLD ABROAD

Manchester and Lemon Peel.

A very great improvement has taken place in the condition of lemon peel imported into Manchester during the past year from Sicily and Italian ports. The Medical Officer of Health, in his annual report to the Port Sanitary Authority, states that in previous years large quantities have been condemned through the unsoundness brought about by the staving in of the pipes and the escape of the brine in which the peel is preserved during transit. The trade in this material goes on as usual, and the fact that the condemnations have dropped from 146 tons in 1909 to four tons in 1910 is very significant of improved methods. It is now a rare event to come across a pipe leaking in any degree. Great credit is due to the shippers for the manner in which they have solved what was proving a very serious difficulty in respect to these shipments.

Recent Cancer Research at Middlesex Hospital.

Some interesting results have lately been obtained in the Cancer Research Laboratories at the Middlesex Hospital, where for several years investigations have been conducted on unique lines. Cancer research at this institution is chiefly concerned with the remarkable fact that human tissues contain varying quantities of radium-like substances, and that there appears to be some connection between the presence of these and the origin of cancer. It is well known that radium and its congeners give off X-rays, and these rays under certain circumstances are known to lead to the production of cancer. Hence it has been suggested at the "Middlesex" that the secret of cancer is possibly to be found in the occasional overcharge of certain tissues with radium-like matter, for under such circumstances surrounding parts would be subjected to the continuous action of tiny doses of X-rays, which, although minute, might in the course of time be able to exert their cancer-producing effect. It will be remembered that it is only when human tissues are exposed for a very long time—say, for many hours a day and months at a time—that they are able to bring about such a result.

Up to the present time a number of important facts have been discovered which appear to confirm this view, and it is not improbable that this remarkable and lengthy investigation will eventually throw light on many of the obscure problems which surround the cancer question. Recently the writer had an opportunity of visiting the Cancer Research Department at this hospital, when the director very kindly explained the nature of the latest investigations there for the benefit of the general reader. To put it briefly, although no startling or sensational deductions have yet been made in the laboratories, a vast number of facts are being steadily accumulated there in regard to this connection between radium and cancer, which, no doubt, will some day be made to fit into their proper places in a new theory of the cause of the disease. One important advance that has lately been made at the "Middlesex" is the discovery of certain tiny granules in normal tissue-cells which are not found in cancer-cells, and it is hoped that this discovery may ultimately lead to a valuable method of settling the question as to whether any growth of doubtful appearance is cancerous or not.

The visitor to these cancer laboratories cannot fail to notice that the director and his assistants are distinctly cramped for room at the present time; so much so, that a wide passage has had to be fitted up as an extra research room. Consequently the staff there are looking forward to the time when they will occupy the new laboratories of the Barnato-Joel Cancer Charity, which it is hoped will be ready in a few months' time. A further point of interest is that a trained physicist is now working at the "Middlesex" for the purpose of checking, from the purely scientific point of view, the observations referred to; this gentleman, it may be noted, is at the same time, a "Beit Research Fellow." In conversation, the director of the Cancer Research De-

partment pointed out that his work had been greatly helped by the handsome present of radium which was given to the laboratory some little time ago.

Infant Feeding and the Conference of Women at Brighton.

Hardly any public utterance of the past few months has been more sensible or comes more directly to the practical consideration of some phases of the baby question than the address on "Infant Feeding," by Florence S. Willey, M.D., of London, before the conference of women at Brighton, Eng. "The feeding of infants," she said, "is one of the most important subjects with which the people of a country can concern itself, for it helps determine the full or the incomplete development of the race and hence the position which that country can hold in competition with other nations." The paper was one dealing with proper feeding, the natural and the artificial kinds. There is one kind of food, the speaker noted, that is usually left unconsidered, although of vital importance in the nourishment of the child, viz., oxygen. No arrangement for the feeding of children is complete which does not take into consideration the proper supply of fresh air and sunlight, whereby the system is afforded oxygen and the means of carrying it to the tissues to burn up the waste products. "A moment's consideration," said Dr. Willey, "will remind any one who knows the homes of the poor at first hand, that not one in a hundred children has even approximately the amount of oxygen it needs for full development, and it is further true that unless this air supply is furnished at the same time that the food is improved, much of the effort will have been in vain.

In referring to the natural food, the speaker commented on the fact that among the poorer classes this is commonly furnished, but in spite of it a majority of the children are ill-developed. One reason for this is suggested in the fact that the mother's milk is too often supplemented by solid and indigestible food which cannot nourish the child and which at the same time makes it unable to assimilate the milk that should be its food. Then again, and this is an important matter, the mother's milk may be of poor quality so that in itself is not sufficient nourishment.

In the first matter much is now being done by health authorities, and the work is worthy of much greater development, to teach the parents that milk itself is a perfect food and that the other things are harmful. Much progress has been made in this kind of education during the past ten years. The danger of poverty in the mother's milk has not attracted very much attention, although in France there are some regulations whereby an impoverished mother may get food free while the child is young. The French are quick in recognizing economic conditions of the kind, and by them it is the child that is considered first. The question of legitimacy is not raised for a moment; it is a child, and the mother must be nurtured. In other countries failure in the child to develop properly is oftentimes laid at the door of the child, when the difficulty lies with the mother. Even the virtue of motherhood is not able to manufacture something out of nothing, although this belief is one that appeals to the poor. It seems to be the cheapest way of filling the new mouth, and the longer it can be cared for in this way by its mother the longer will be postponed the necessity of making an additional expenditure for food. Feeding of mothers is a most important factor to the health conditions of the babies of the poor, and the question of infant feeding in a community cannot be considered as solved until some means is assured that the nursing mothers shall be adequately nourished. When this is accomplished there is secured for the child a fair chance to begin the normal development towards healthy manhood or womanhood.

In her discussion of the question, Dr. Willey did not point out means to this end; this being a social problem to be worked out by each community according to its own conditions; but she did emphasize the fundamental principle that you cannot make bricks without straw, and that there cannot be built blood and bone and brain and muscle without a suitable supply of the elements out of which these structures are made.

The second portion of the address of Dr. Willey related the story more familiar to everyone — the question of the treatment of milk for infant food. Attention is

called by this London authority to the fact that some of the popular notions with reference to pasteurized and sterilized milk do not come true. It has been claimed that boiled milk tends to give the children rickets and scurvy, but in Paris, where this treatment of milk is common, these diseases are rare. Physicians are by no means agreed on the matter of the digestibility of boiled milk, and the current of opinion changes from time to time. Experiments made on animals now seem to prove that when fed on the milk of another species the young thrive as well or even better on boiled milk than on raw or pasteurized. The practical point is that boiling has really no serious disadvantages, it is a simpler method to teach the poor, or anyone else with limited advantages and appliances, and it insures more complete destruction of the pathogenic bacteria.

The general conclusions of Dr. Willey's story are, that the best food for an infant is mother's milk, but this should be adequate in quantity and good in quality and the mother must be suitably nourished. In cases where cow's milk must be used for the young child, it should be boiled or pasteurized, the curd should be reduced in quantity and rendered more digestible by dilution with water, barley water, or lime water. Dried milk preparations or malted milk may be used, but with intelligence and caution. Regularity of feeding is an important though often neglected point, which should be observed, securing, as it does, regular and healthy digestive action and as an aid in forming regular habits.

The British Illuminating Engineering Society and School Lighting.

Two recent meetings of the British Illuminating Engineering Society have been occupied with a discussion of school and college lighting. So far as the elementary day schools are concerned, the thing of chief importance is to ensure a plentiful and properly directed supply of daylight, but the increase of evening classes has made artificial illumination in schools a serious problem. Dr. James Kerr, dealing with the daylight question, arrived at the following conclusions: (1) That the window-lighting on the side of the class-room on the scholars' left should be as ample as possible, and equal at least to one-fifth of the floor area; (2) that window-lighting facing the children or coming from behind them, so that (in the latter case) they sit in their own shadows, ought no longer to be permitted; (3) that the rapid diminution of light with the distance from the window, which the photometer proves to be appreciable within the length of an office writing table, makes it inadvisable to have class-rooms of greater width than 20 feet. He added that many rooms were capable of great improvement by a judicious wall-covering. Above a height of 5 feet from the floor the color should be very light, and the beams and rafters should also have a coating of white paint. In the subsequent discussion an architect, Mr. Percy Waldram, expressed the view that it was vitally important to have high-angle illumination, and urged that the authorities should be prepared to sacrifice a great deal in order to have top lights in class-rooms. Mr. Bishop Harman, oculist to the London Education Committee, said that the minimum artificial illumination on the school desk of a child had been estimated at 10 metre-candles, an amount not large when compared with ordinary daylight in a fairly lighted room. An ideal distribution of gas pendants or electric lamps for a class-room would be to hang the first lamp —a 16 candle power lamp with 90 degree shade—slightly in front of the dual desk at the extreme left of the first row, and to make the others follow it from that point across the width of the room at distances of not less than 6, nor more than 9 feet. This line of lamps should light the first and second row of desks, a second line being hung in the same relation for the third and fourth rows. Indirect illumination by reflection, although useful in shops, show rooms, and museums, was inadvisable for continuous and detailed work at the desk. Dr. W. J. M. Ettles emphasized the bearing of wrongly directed lighting —more particularly lighting from behind, but also from the right side — upon posture, and, consequently, its ill effect upon the growing spine. The good results of scientific lighting in schools, however, were largely nullified by wretched lighting at home, and he advocated the abolition of home lessons. Two reports were presented, one, by Mr. Leon Gaster, giving the results of tests of the actual conditions of illumination prevailing in various London

elementary schools, and the other, by Mr. J. S. Dow, dealing similarly with colleges and technical institutions. The voluminous data collected by these two investigators related mainly to artificial illumination, especially upon desks and blackboards. On the desks in the class-rooms of four typical elementary schools in London the illumination in foot-candles was found to vary from 1.6 to 5.0, the average being about 2 or 3 foot-candles. Two seemed to be sufficient for ordinary class work. Complaints arose when more delicate tasks, such as shorthand, sewing, or the reading of music, came into consideration. For such labor Mr. Gaster recommended 5 to 10 foot-candles. Blackboard illumination was the least satisfactory feature in the cases taken, varying within wide limits and having apparently no scientific basis at all. Comparative figures for German schools showed a relatively high illumination — never less than 4 foot-candles in the cases given, and sometimes as much as 8 — though the consumption per square foot of floor area was not noticeably different from that usually met with in this country. It was claimed for the high-pressure indirect gas lighting used in Munich that the actual brilliant source of light was well screened from the eye, and that the possibility of shadows being cast by the writing hand was reduced to a minimum. In dealing with colleges and technical institutions Mr. Dow said that the lighting of the lecture theatre in many cases was of the rule-of-thumb order. It was the exception for special provision to be made for lighting the blackboard and diagram sheet, and the illumination on the desks — a less important matter in lecture theatres than in schools — often exceeded that on the lecture table. A requirement generally felt was some form of fixture which would evenly distribute the local illumination of demonstration table and blackboard and at the same time screen the eyes of the audience. Both Mr. Gaster and Mr. Dow emphasized the need for effective shading; no unscreened source should be allowed near the direct line of sight.

Hookworm Studies in Europe.

It is interesting to note a discussion of the hookworm problem recently in one or two of the Milroy lectures before the Royal College of Physicians of London, England, by A. E. Boycott, M.D., lecturer on Pathology in Guy's Hospital. The diagnosis, the method of detecting the eggs in human wastes, and the conditions both of environment and individual, that determine the spread of the disease in Europe, are all clearly set forth.

In the presence of a well-marked anæmia among those who work underground, the possibility of ankyloctoma infection should now be at once suggested. The disease was long unrecognized in Cornwall, it was known to be refractory to certain remedies like iron and arsenic, it had ben diagnosed in a variety of ways, and had passed under the' eyes of prominent London physicians. Of course, in England, as in the Southern States of America, there needed only the suggestion of what its nature might really be to show the means of diagnosing, since in definite cases the eggs of the worms are to be found in the dejecta of the patients. The eggs are different from those of any other human parasite, and thus are readily to be recognized, the principal confusion existing, it is said, among people who have a vegetable diet, and those who have other widely distributed maladies. In Assam, nearly all the natives are effected, and at the same time other diseases, like malaria, are almost equally well distributed, and in China, there are difficulties in assigning the proportion of disease due to ankylostoma in the general beri-beri infection. In Cornwall miners' phthisis gives symptoms not always readily to be clearly distinguished without special tests.

The more true is this in cases where the infection is slight and no obvious anæmia is present. Blood tests for hemablobin may suggest the hookworm by the lack of this material, but on the other hand, eggs may be present in cases with the normal of hemaglobin. Superficial examinations for the eggs with the microscope are likely to catch them only by good luck, and in incipient cases the cultivation of the larvæ affords the most accurate diagnosis. A process intermediate between the two includes washing, floating the eggs and collecting them by the centrifuge, the effect of which has been in a large series of examinations the adding half as many to the original number determined to be positive. In the Westphalian coal fields, Bruns, who is in

charge of the laboratory work, stated at an international congress of a year ago, that of men slightly infected, forty per cent. could be detected by the microscope, fifty-five by the washing process and ninety-five by methods of culture.

Dr. Boycot considers next a technical method of diagnosis of early cases through a considerable increase in eosin-ophile leucocytes in the circulating blood, the most marked reaction here coming with young people who have been only recently infected and who have not become anæmic at all. In these cases there is a leucocytosis comparable to that which occurs in trichinosis. With this in mind the lecturer has some difficulty in conforming the results of Dock and Bass, of the United States, with those established in Cornwall and Westphalia, unless, indeed, there may be a difference between the American worm and that of Europe.

The passing of the ankylostoma from host to host is one of the curiosities of biology. There are so many ways in which the transmission of pathogenic parasites is effected directly that there is something unusual in this creature, where the infection in man is dependent upon the environment of the parasite outside his body. Some parasites have no life outside the bodies of their hosts, being given directly from one to another; others oscillate between an animal host and man; others still, like the diphtheria bacilli, have a comparatively brief term of saprophytic life, while still different germs, like those of tetanus, are in the latter condition most of the time. In the hookworm the eggs cannot develop within the body and the young worms cannot become sexual and multiply outside of it. Both conditions are essential to the continuance of the ankylostoma race. There are, moreover, a number of limiting conditions. The eggs cannot hatch without a free supply of oxygen, and therefore cannot mature in the intestine. They will rarely hatch under water, nor if protected from the air to the interior of a manure pile. In a considerable mass of water the eggs will not develop, so that a well-sewered city is reasonably free from infection, although ten days of deprivation of oxygen may be needed to kill the eggs. The larvæ require oxygen, but they thrive well in water. In these stages oxygen is necessary, but when the creatures become adult they develop most remarkable anærobic capacities.

Moisture is another essential element to the propagation of the hookworm. The eggs or larvæ live a very short time in dry air at ordinary temperatures. The disease never prevails in dry climates, and even in places where it has been abundant, there has been a choice of localities. Its travel from man to man depends upon two factors, the deposit of dejecta upon the ground or in insecure outhouses, and the prevalence of a bare-footed population. In Porto Rico the sugar fields show the difference of locality, since they were not nearly so heavily infected as the banana plantations or those devoted to coffee.

The former are exposed to the sun and are ploughed every year, while the coffee bush is always shaded and the banana grows in groves. In Westphalia there was a serious outbreak in the coal mines following the introduction of a systematic watering of the roadways to prevent dust explosions. The number of cases reported in the years following the beginning of the watering jumped from four per 10,000 miners working to twelve, forty-one and fifty-three. In these German mines the increase in disease led to a systematic examination of all the men and nearly 10 per cent. were then found to be infected. In the South African gold mines, which are dry, about half the natives who come to work are already infected, but the disease does not spread and few if any of the white miners have been affected. In Cornwall the mines vary in wetness with the less number of ankylostomites in the drier ones. Sprinkling is considered necessary as a precaution against explosions, but a system of dry zones has been instituted which has many advantages from the sanitary standpoint.

The only localities in northwestern Europe where the hookworm can gain any hold and make headway are the underground workings. Most mines are warm, and many, hot, and in them there is a suitable environment for the development of the parasite, varied, of course, by many factors into which Dr. Boycott goes quite in detail. Local circumstances influence the conditions. The Levant mine in Cornwall is under the sea, hot and rather badly ventilated, but the seepage of the salt water kills the eggs. In the salt mines of

Hungary the disease is not known, and in France it varies much according to the salinity of the waters.

The lecturer noted the reasons for the spread of the disease among the Cornish miners as due to the filthiness of the men and a number of contributory causes. The tropical temperature and the dampness have been efficient aids to the development of the eggs and larvæ, while the former insufficiency of sanitary accommodations at the surface and the absence of anything of the kind in the mines, have been factors to the distribution of infected matter. On account of the haste always accompanying departure from home the odd corners and out-of-the-way places of the mine were the regular resort, and from them as foci the wastes were tracked into all other places. Much of the travelling of the men was up and down ladders where the hands and clothing came into contact with the filth from the boots. These conditions have been very much improved, the surface now being in general well furnished with good out-houses, the use of which is in a way compulsory. For the Dalcoath mine some years ago pails were introduced, and since that time a provision of such appliances has been made obligatory by law.

Hookworm disease has been characterized to be a malady of a barefooted people, but in England the miners are generally shod. These boots are, however, often leaky, and what is more important, much of the work is done with other portions of the body close to the ground. In the warmer mines the workers wear no upper garment, and such contacts as there may thus be with the soil in combination with the ladders are sufficient to account for the diffusion of the disease.

Preventive Medicine in the Tropics.

The recently published Medical Report for the German Colonies, *Berichte uber die deutschen Schutzgebiete fur das Jahr* 1908-9, *Herausgegeben vom Reichs-Colonialamt, Berlin: Mittler und Sohn, contains* a record of the clinical and hygienic work carried out by the several medical staffs. The clinical notes, especially those dealing with the treatment of tropical diseases, are well worthy of perusal by anyone interested in the treatment of any particular disease, but the most interesting portions of the report are those dealing with preventive medicine in tropical colonies. Realizing that no colony could be prosperous without a plentiful supply of healthy native laborers, the German Government has spent considerable sums of money on the scientific investigation of the epidemic diseases in each colony, and is now systematically applying the knowledge so gained to stamp out these scourges of the native population. Measures are also being taken to protect Europeans living in the colonies. The measures adopted in German East Africa, of which we give a summary, show the lines on which the German Government is working.

The following diseases, which in the past have caused most loss of efficiency or lives, were combated as detailed below:

Smallpox—In recent years only isolated cases of smallpox had occurred in the colony, but in the year covered by this report there were a number of small epidemics, in which, however, only natives were attacked. It is worth noting that the natives in many of the districts try to protect themselves against smallpox by inoculation, carried out as follows: they express the contents of a smallpox pustule, mix this with some native "medicine" to diminish the virulence, and then rub it into a small incision in the left arm or forehead. In some cases only a local pustule at the site of inoculation was produced, but in others, especially children, the practice was followed by a mild attack of smallpox.

The preventive measures adopted by the German authorities were the isolation of persons suffering from smallpox, and, as far as possible, vaccination of the whole population. In the year 1903-4 the number of natives vaccinated was 21,453; the yearly number of vaccinations performed has steadily increased, and in 1908-9 amounted to 117,863. The great increase has been rendered possible by the fact that lymph is now prepared in the colony itself, instead of being entirely derived from Germany, as formerly.

Plague—The endemic foci of plague had been eradicated by 1906, but there still remained the risk of its introduction by trading vessels from India; this actually took place in Zanzibar in 1905, 1907, and 1908. The greatest difficulty was caused by dhows with native crews, as these, in-

stead of making use of the regular harbors, where a trained examination staff exists, were often simply beached at any convenient spot, so that when the tide fell they lay dry on the beach, and infected rats could scamper ashore. Some 20,000 rats were destroyed in the ten principal harbors.

The plague investigation department in Daressalam possesses a fully-equipped laboratory, as well as three mobile plague laboratories, which can be attached to any suspected locality. During the latter part of 1908, 12 cases of plague, 4 of which were of the pneumonic type, occurred in Daressalam; 6 of these were fatal. The last case occurred in January, 1909. Fortunately these cases were detected at an early stage, and, owing to the precautions taken, no epidemic resulted. At the same time rats were found to be infected with plague. Between 600 and 1,000 rats were examined each month from October, 1908, to June, 1909. In October, 1908, the percentage of rats found to be infected was 7.9; this percentage steadily diminished, till February, 1909, when it was only 0.3; after this date no definite infections were detected.

The measures taken to prevent the disease from spreading consisted in the isolation of plague patients, careful burial of the corpses of those dying from plague, disinfection of the dwellings, keeping contacts under observation, destruction of rats. The greatest importance was attached to the last precaution. The work was directed by the medical officer in charge of the laboratory, assisted by a junior medical officer, four medical subordinates, and ten to twenty natives. The town was divided into districts, in each of which in turn rat traps were set and phosphorus rat poison systematically laid out. Once in each two months every surface drain was fumigated with the Clayton apparatus. Two refuse carts were employed for two months to collect and remove all rubbish heaps which could afford a hiding place for the rats. By the end of the year plague had been eliminated from Daressalam.

Malaria—As in every tropical colony, malaria is the principal cause of inefficiency. In German East Africa it is accountable for one-third of the total sickness and one-quarter of all the deaths. The great majority of Europeans live in the towns of Daressalam and Tanga; hence the anti-malaria campaign was mainly directed to improving the health of those two places.

The antimalaria staff employed in Daressalam consisted of the medical officer in charge of the laboratory, assisted by two sisters, two Genoaese assistants, and eight natives. The town was divided into districts and the blood of the native inhabitants in each district was systematically examined once a quarter to detect malaria carriers. In this way over 20,000 blood films were examined during the year. Owing to changes in the population and in the methods employed for examining the blood the results obtained cannot be used as an exact index of the state of malaria in this and in the previous years. It may, however, be stated with some approach to accuracy that, of 100 malaria carriers, 3 have tertian parasites, 10 have quartan, 15 have crescents, and 72 have rings, most of which are probably of the malignant variety. These figures would appear to denote that benign tertian has receded as the result of the general administration of quinine, but that quartan malaria has increased.

All malaria carriers, 4,578 in number, were given a course of quinine. In most of the cases the course lasted three months, and was carried out as follows: On two successive days of each week adults were given 15 grains of quinine in tabloids or solution, and made to swallow it in the presence of a European; children received a proportionately smaller dose in a sweet solution. In only four cases was an attack of blackwater fever induced by this treatment; all recovered, and were afterwards put through an acclimatization course of gradually increasing doses of quinine till complete tolerance of the drug became reestablished.

The anti-mosquito measures were as follows: In May all drainage ditches were treated with saprol, and with a mixture of 2 parts of saprol to 1 of petroleum. In the case of wells for which petroleum was not suitable a species of cicada was introduced; at the beginning of the year a supply of these insects was obtained and placed in a pond in the experimental gardens; they increased so rapidly that a regular supply for use in wells could be relied on. Water tanks were either filled in or covered with

wire gauze. Cisterns in dwellings were regularly run off and dried. Unfortunately funds did not permit of these measures being as thoroughly carried out as was the distribution of quinine, nor could mosquito brigades be formed. Mosquito-proof shelters have been put up in the verandahs of a number of houses; they are usually constructed of wire gauze, 10 feet by 10 feet by 10 feet. It was not found possible to effect a complete separation of native dwellings from those of Europeans.

The antimalaria campaign report from Tanga lays special stress on the great assistance rendered by the malaria sisters in examining and treating the natives. The blood of 8,239 adults and 2,870 children was examined for malarial parasites; of the adults 1,557 (=16 per cent.) and of the children 670 (=24 per cent.) were found to be carriers. Among 1,635 carriers, malignant tertian parasites were found in 954 cases, benign tertian in 242 cases, quartan in 387, and mixed infections in 52.

The report from the Cameroons mentions that the European officials had been exceptionally free from malaria during the year, and attributes this happy condition to the fact that most of them take quinine regularly (15 grains every fourth day) and live in well-built houses at a distance from the native dwellings. The railway employees suffered most from malaria, but even in their case, thanks to the persistent instruction given on hygiene, the incidence was not great. The public health generally can never be really satisfactory till the native quarter is completely separated from the European dwellings.

Ankylostomiasis—This disease fortunately has not attacked the Europeans, but among the natives working on the plantations of the coast districts it is the cause of much inefficiency and many deaths. The measures adopted with a view to eradicating the disease were as follows: (1) Instruction as to the nature of the disease, its path of infection, and its consequences, was given to Europeans and natives both by lectures and the distribution of pamphlets printed in German and Swaheli. (2) Proper latrines were constructed for all natives living in the infected districts. The form usually adopted was a large hole 4 or 5 feet deep with a narrow opening at the top lined with tin to prevent soiling of the ground. (3) Protection of the water supplies from infection. (The last two measures were carried out by the planters.) (4) The detection of all infected persons by microscopic examination of the faeces; this was carried out by the medical staff. (5) The treatment of all persons harboring the parasite; this was carried out by the medical staff assisted by the overseers of plantations.

In one district 2,433 natives were examined, and 1,502 (66 per cent.) were found to be infected. The treatment carried out in the Tanga district was as follows: First day, in the afternoon, 5 to 7 grains of calomel. Second day, three doses of thymol, each of 30 grains, with an interval of one to two hours between each dose; the drug was crushed and given wrapped in a wafer or cigarette paper. On the third day a purgative was given if required; for this purpose castor oil was preferred as calomel often failed to effect its purpose, and if the dose was increased symptoms of stomatitis were liable to occur. These large doses of thymol sometimes produced an effect similar to alcoholic intoxication, but were never followed by any serious symptoms.

Leprosy.—This disease is found in many districts, but fortunately does not show any tendency to spread and is not likely to have any prejudicial effect on the industrial development of the colony. The former system of collecting all lepers into a few asylums and keeping them strictly isolated there has therefore been abandoned in favor of a scheme of leper villages.

Sleeping Sickness—Most infections appear to have taken place in Uganda or the Congo; strenuous efforts were therefore made to stop all intercourse with these countries. Some of the more intelligent natives were trained to examine suspects for enlarged glands and afforded the commission much assistance, especially in the examination of travellers.

At the end of the report there are a number of photographs of hospitals for natives recently constructed in the various colonies.

The report contains a mass of information on clinical medicine, sanitation, and public health. It speaks volumes for the very thorough and conscientious way in which the medical staffs of the German colonies are carrying out their duties.

In every walk of life, whether it be professional or mechanical, one generation out-does its progenitor. The world is continually becoming richer and better because each in turn places upon the altar of the world's progress some accomplishment, some invention, some discovery, some method, which makes that particular generation, or the particular time stand out prominent over every preceding period.

—*Anon.*

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Special Articles

SHALL WE HAVE PURE MILK IN CANADA

By J. H. ELLIOTT, M.B.

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Of the various foods in general use there is none perhaps so universally used in every family and by every individual as milk. There is none which from its composition can be of such universal service to the sick and well of all ages. Containing all the essentials of a perfect food, requiring little or no preparation before serving, comparatively easy of digestion, it has its place as one of the very important articles of diet for the sick and convalescent.

Milk fresh from the udder of a healthy cow is almost sterile, and as such is a most excellent article of diet for either the sick or well. But this cannot be said of market milk, 12 to 48 hours old, which has received no special care. It is such an excellent medium for the growth of micro-organisms that from containing a few bacteria per c.c. when milked from the udder, it is not unusual for the count to increase enormously when handled carelessly. Examination of samples of milk delivered to houses and hospitals in St. Petersburg, London, New York, Washington, Toronto and other cities, have shown the presence of millions of bacteria per cubic centimetre, in some an average of over 22,000,000, and a maximum of over 307,000,000 per cubic centimetre. Fortunately most of these organisms are saprophytic and not concerned in the production of disease unless through their toxins. Yet many diseases are conveyed by milk, and epidemics running into many hundreds have been directly traced to a contaminated milk supply. The principal diseases carried by milk are typhoid, scarlet fever, diphtheria, tuberculosis and infantile diarrhœa. That the first three are not infrequently milk borne is amply demonstrated by the study of numerous epidemics traced definitely to the existence of a case of one of these fevers in the person or household of one handling milk after

leaving the cow and before reaching the home of the consumer.

Park's recent bacteriological studies of tuberculosis in man show us that bovine tuberculosis plays an important part in the tuberculous affections of children. Pulmonary tuberculosis appears always to be of human origin, but the tuberculous cervical adenitis, the mesenteric tuberculous glands, and even generalized tuberculosis in children, when of alimentary origin, seem in most cases to be due to bovine infection.

That infantile summer diarrhœas are in the vast proportion of cases due to milk-borne infection, can be doubted by no one who has looked into the question. The number of deaths occurring in children under one year of age in Canada and many other civilized countries is a standing disgrace. In the last census year (1901) there were born in Canada 149,448 children, and there were 21,328 deaths of infants under one year. One of every seven infants die in the first year of life. There is no cause of death so prolific among children in the first year of life as disease of the digestive organs. Milk forms the principal food during this year, about 400 quarts being consumed per head, and many observers have shown that the death rate from diarrhœal diseases is greatest amongst artificially fed children. Newsholme, of Brighton, as the result of an investigation in an infant population of 1,259 in 10,308 houses in Brighton, England, concludes that, taking the whole of the first year of life, the number of deaths from epidemic diarrhœa among breast-fed babes is not much more than one-tenth the number among artificially fed infants. Not one death from diarrhœa occurred at the age period 6 to 9 months in breast-fed children. Other investigations made in England, France, Australia, and elsewhere have shown that during the summer months the number of deaths of artificially fed infants is three to eight times that of the breast-fed. On the other hand, we know that where milk is properly handled the infant mortality is comparatively low, and where radical improvement has been made in the milk supply and in the methods of handling it, there has been a sudden, even startling lowering of the death rate., This is well illustrated by the statistics given by the New York Hospital for Children on Randall's Island. These children were fed on milk from a carefully selected herd pastured on the island. The deaths from 1895 to 1897 were 41.81 per cent. of the admissions. A pasteurizing plant was then installed, and with no other change in diet or hygiene, the rate promptly fell to 19.80 and for seven years the average was 21.75, or little more than half the rate at the time the organisms in the milk were not destroyed by pasteurization. In this one institution the changed death rate meant a yearly saving of 177 lives.

It is quite safe to say that milk plays just as important a part in the death rate throughout Canada, and that thousands of lives are yearly sacrificed because of impurities in milk. Our adult population should be aware of these facts that they may be on their guard against impure milk. But the infants are helpless, and it is the bounden duty of all to see that in every dairy, every milk shop, and wherever milk is handled, that such precautions are observed as will ensure safety to the consumer.

To secure good milk should not be a difficult matter—it need entail but slight additional expense. To continue to allow milk vendors to sell for human consumption the foul, infected mixture so often sold as milk, should be considered in the present state of our knowledge a breach of the Criminal Act, and differing but little from manslaughter.

By instructing farmers and dairymen in the proper selection, care and feeding of their herds they will be more than compensated for the slightly increased cost of production of a clean milk.

A large proportion of dairy cattle not only yield no profit, but are kept at an actual loss. An Illinois State Bulletin states that the most profitable dairy cows in Illinois give a net profit of $57.22, the poorest have shown an actual loss of $17.93. The average production of the Canadian dairy cow can readily be doubled, and the profit increased fourfold if every milk producer in the Dominion were to adopt careful business principles, keeping an accurate daily record of the amount of milk and butter fat, also the cost of food consumed, by each individual cow in his herd. When he discovers that a cow is not giving a good

return, he should remove her from the herd and replace her by one of greater productive capacity.

A milk to be reasonably safe for human consumption should conform to the standards either of a certified milk, or an inspected pasteurized milk.

Certified milk is sold only in bottles, which are sterilized, filled and sealed at the dairy immediately after the milking, and in these packages are delivered to the consumer. In the city of Toronto three dairies supply milk certified by the Milk Commission of the Academy of Medicine. Their standard is as follows:

The herd milk shall contain 12 to 13 per cent. of total solids, of which 3½ to 4½ shall be butter fat.

It must be free from coloring matter, preservatives or other foreign substances; from blood, pus or disease-producing organisms; from all disagreeable odors and tastes.

It shall not have been heated in any way, nor frozen.

All cows shall have been tuberculin-tested by the veterinarian of the Commission before entering the herd and found healthy, and shall be retested every six months.

It shall have been cooled to 45 deg. F. within one-half hour after milking, and kept at not higher than 45 deg. F. until delivered.

It shall not be more than 24 hours old when delivered to the customer.

It shall not contain during July, August and September more than 10,000 bacteria per c.c. nor in the remaining months of the year more than 5,000.

The veterinary inspector and the physician of the Commission shall each month inspect the herd, the health of the employes, and the hygienic conditions of the dairy.

Their requirements relating to barnyard, stables, water supply, cattle, milkers and other helpers, the dairy, etc., are too long to be quoted in this paper, but those interested may secure a copy on application to the Secretary at the Academy of Medicine, Toronto, or the Milk Commission of the Canadian Medical Association.

Certified milk, because of increased cost, can only be produced in limited quantity. For general use we must rely on the exercise by the producer, transportation agent, vendor and consumer, of reasonable care, and where there is any doubt as to the possibility of contamination, ensure safety through efficient pasteurization.

Pasteurization consists in heating milk in a closed vessel to a temperature of 140 deg. F. for 30 minutes, or 150 deg. F. for ten minutes, immediate refrigeration to 40 or 45 deg. F., and keeping at that temperature until delivered to the consumer.

In large municipalities this is preferably done under inspection or direction of the health officer, but may be efficiently done at home. It is not to be confounded with boiling or sterilizing by heat, which processes destroy the ferments present, seriously interfere with the subsequent rising of the cream, and modify the taste of the milk.

Pasteurization produces none of these effects, but does effectively destroy all pathogenic organisms and thus gives us an absolutely safe milk. These are the rules formulated by the Canadian Medical Association Milk Commission for the production of "Inspected Milk," which, when pasteurized, is a perfectly safe milk. The rules involve no other expense than those requisite in maintaining a clean dairy, clean stable, clean cows, clean utensils, and careful handling of the product.

The following regulations ask for nothing more than the cleanliness required in the preparation of any other article of diet placed on our tables:

Barnyard.

1. Manure should not be allowed to accumulate in the barnyard in the summer time, and should never be allowed to come in contact with the stable or milkhouse. It gives rise to bad odors and encourages flies.

2. The barnyard should be well drained.

Stables.

1. Cows should be housed in well-lighted and well-ventilated stables in order to keep them in good health.

2. There should be at least 500 cu. ft. of air space for each cow.

3. No other animals but cattle should be kept in a cow stable. It should not be used for storage of any kind because of the danger of accumulating dust.

4. The stable floor should be made tight and preferably of some non-absorbent material with a proper slope for drainage.

5. If the space above the stable is used for the storage of hay, etc., the ceiling should be made dust proof. Cobwebs should not be allowed to collect.

6. Stables should be whitewashed with lime every six months.

7. There should be an efficient manure gutter which should be cleaned morning and evening.

Cows.

1. Sick cows should be removed from the herd and their milk should not be used.

2. Cows should be kept clean. The udder and teats should be washed and well dried just before milking. The clipping of the long hairs around the udder and tail will materially help.

3. Cows must be treated kindly and spoken to gently.

4. The bedding should be clean.

Milking and Milkers.

1. The milkers should be healthy and should wear a clean linen or cotton duster and cap while milking.

2. They should wash their hands thoroughly with soap and water and dry them on clean towels before milking.

3. The hands and teats must be kept dry during the entire process of milking.

Utensils.

1. The pails into which the milk is drawn should have an opening not exceeding five inches in diameter on one side of the top. This prevents the entrance of a good deal of dust.

2. The milk pail when full should be immediately removed to the milk house, and the milk strained through gauze that has been sterilized by boiling at least 5 minutes. The milk should then be immediately cooled to a temperature of 50 deg. F. and kept at that temperature, or lower, until delivered to the pasteurizing plant.

The more rapidly milk is cooled, the safer it is and the longer it will keep, because cold checks germ growth. It should be delivered to the pasteurizing plant within eighteen hours after being drawn.

3. Ice should be kept for cooling.

4. All water used must be pure. It must be easily accessible and abundant.

Milk House.

1. A milk house should be provided separate from the stable and dwelling house, and used for storing the milk only. It should be kept absolutely clean.

2. Farms which furnish "inspected milk" must always be open to inspection by the Commission.

3. The Commission also reserves the right to make a bacteriological and chemical examination of the milk as they deem fit, both before and after pasteurization.

4. Milk must comply in all points with the requirements of the Pure Food Law of the Adulteration Act of the Dominion of Canada.

If the above rules and regulations are fulfilled, the milk when delivered to the pasteurizing plant should not exceed 100,000 bacteria per c.c. between May 1st and September 30th, and should not exceed 60,000 per c.c. from October 1st to April 30th.

While milk thus produced is clean, yet it is not bacteriologically clean, but this can be accomplished by pasteurization or heating.

This insures an absolutely safe milk at little or no increase of cost.

Those interested in a pure milk supply should be acquainted with the following literature:

"Report of Canadian Medical Association Milk Commission, 1910."

"Milk and its Relation to Public Health," U. S. Public Health and Marine Hospital Service, Hygienic Laboratory, Bulletin No. 56.

The Legislature of the Province of Ontario at its last session passed a milk act which gives each municipality power to establish such regulations as will ensure a safe supply for its citizens. A minimum provincial standard of three per cent. butter fat and twelve per cent. total solids is fixed, but each municipality may fix for its own standard beyond this minimum of requirement.

Each municipality may enact by-laws regulating milk offered for sale, and may inspect such milk and dairies producing it *wherever situated*. These by-laws may relate to:

(a) Care of cows producing milk.

(b) Sanitary conditions of stables, dairies and store rooms.

(c) Water supply of herd.

(d) Can cleansing and type of all utensils used.

(e) Proper care, storage, transportation and distribution.

(f) Bacteriological tests of milk.

(g) Granting, refusing and cancelling licenses to producers and vendors.

(h) Appointment of inspectors.

(i) Publication of tests and inspections at discretion of Health Officer.

The sale of milk is prohibited from any cow with tuberculosis of udder or milk glands, or with tubercle bacilli present in the milk, or suffering from anthrax or epizotic fever or any other local or general disease which is liable to render milk from such cow a menace to the public health.

No one shall assist in the production, transportation or vending of milk who has been exposed to any of the infectious diseases.

No cans, bottles nor other utensils used in distribution of milk shall be used for any other purpose whatever.

Certified milk is defined and the term certified may not be used unless authorized by the Medical Health Officer or an incorporated society of medical practitioners. The term pasteurized is also defined and the process is subject to the inspection of the M. H. O. of the municipality.

It is to be hoped that the medical profession and others interested in a question so closely related to our public health, will see that our municipalities avail themselves of the power given them under the Act.

Quebec and Saskatchewan have also admirable regulations regarding milk and we trust these, with those of Ontario, will not remain on the statute books unheeded but will be enforced, and we would like to see in the other Provinces of the Dominion the adoption of similar legislation.

Upon the improvement of our existing milk supply depends the lives of thousands of helpless Canadian babes.

COUNTY OFFICERS OF HEALTH METHODS OF ORGANIZATION AND WORK

By P. H. BRYCE, M.A., M.D.

CHIEF MEDICAL OFFICER OF THE INTERIOR DEPARTMENT OF CANADA.

In the two preceding articles* we have seen the stages through which public health organization has been evolved whether in Canada or in England; but it is apparent that every stage of social development, urban as compared with rural, closely populated cities as compared with towns and villages, or large new and sparsely settled districts as of Northern Ontario or the prairie provinces, may each demand separate treatment. Of course, it always must be kept in mind that efficiency in all cases depends upon a Medical Officer of Health being appointed to give all his time and energy to the work and be one who by both training and experience will be able to solve the many difficult problems as they may come up.

While in Manitoba the old Ontario idea exists, where towns and villages have their health officers, the method is modified by having members of the Provincial Board of Health appointed from some five large districts over which each is expected to exercise general jurisdiction. In Saskatchewan there is a Commissioner of Health appointed by the Government who especially assists in and directs local health work either personally or by assistants, although, of course, the towns and villages have their own officers; or again in Alberta, the Provincial Board of Health has its executive Medical Officer and Secretary with officers at Edmonton and local boards of health appointed in cities and towns, but the Health Act contemplates the subdivision of the Province into some five health districts each under an all-time medical officer appointed by the Provincial Board and in part paid by the district. Thus it is apparent that there is already enough of variety in method in Canada to insure that we may obtain illustrations of the success which fol-

* The Public Health Journal for March and May, 1911.

lows the adoption of any particular method.

Everyone will agree that to-day we have entered absolutely into the *scientific period* as applied to public health administration. Our knowledge of the causes of communicable diseases, of the direct effects of pollution of streams and of the methods of sewage disposal is now so exact and the scientific means at our disposal so many and available that we are in a position to state definitely that, given a Medical Officer of Health trained in his medicine, his bacteriology and his chemistry with a knowledge of their application to water supplies, sewage disposal, drainage, lighting and ventilation of buildings and so on, we have only to give him enough salary—to allow all his time and energy to be given to the work of public health and to supply him with simple but adequate machinery as adequate laws and regulations, a laboratory, inspectors, isolation hospitals, open air schools and homes for incurable cases as of consumption — to assure the public, who naturally wish for protection and who will pay when they understand, that their interest in all matters of health are being protected.

Within the last few years the State of Pennsylvania has evolved under a Commissioner of Health the most recent example of highly organized public health machine which has been witnessed anywhere, it being modelled largely upon the system developed in Cuba after the Spanish war, and as now exists at Panama. It is constituted by a chief of staff and subordinate officers placed over the several branches of work which extend down to the extreme limit of the establishment, maintenance and officering of state sanatoria and dispensaries all practically being paid for by State funds.

It may be quite true that the mountainous nature of much of the State and its sparse population except where gathered into mining towns, may prove that this is the best system there; but such a health machine in proportion as it becomes, a bureaucracy will probably show ultimately the defects of all schemes which fail to educate and cultivate the interest of the individual in what affects him personally and which serve to dull rather than stimulate the sense of responsibility for the maintenance of house, home and municipality as a matter both of personal duty and local pride.

Realizing that it has been the slow but gradual evolution of local self-government which has placed English municipalities in their leading position in sanitary development we cannot doubt, since the strength of the State is measured by the quality of its individual citizens, that the evolution of local public health organization will in the end prove best suited not only to the genius of our people but also ultimately to the highest and best results.

What, then, should the nature of that local organization be which is likely to produce the best and most permanent results and the most beneficial effect upon all phases of public health work?

It is scarcely necessary to say that it must primarily be based upon some carefully worked out system of general provincial health legislation in harmony with yet wider and more general federal health legislation. Essentially, however, it must provide for a comprehensive and perfectly clear definition of the powers and duties of local health authorities, with equally definite provisions whereby their power to obtain the requisite money grants to perform the work required will be assured. As has been amply proven during the past twenty-five years in Ontario the absence of any power in the Act creating Local Boards of Health for them, to levy or cause to be levied direct assessments for moneys for public health purposes has been the explanation of much of the unprogressive character of their work.

School Boards make their assessments for public health purposes, while receiving a proportionate amount out of Governmental funds, public libraries are allowed a definite levy for their needs; but a Local Board of Health has only the municipal council to depend upon, which, as the Act states, "may vote such sums as are deemed necessary by the Local or District Board for the carrying on of its work." The Act provides for the appointment of members of Local Boards of Health for three years; but it has been the routine practice in cities, in more recent years especially, to appoint such from amongst members of the council.

Thus we see that at the outset in Ontario, at least, any well-thought-out plan of

systematized health work may be, and is frequently, rendered futile by the whims of an indifferent or hostile council. The Local Board of Health must therefore, in order to be effective, have powers fixed by law, whereby their estimates for statutory routine work would be discussed and passed but assured, as are all other estimates, with a liberal grant to cover the emergency work due to epidemic outbreaks, which are always liable to occur.

Inasmuch, however, as the quality of the work to be done will be measured by the standard of fitness of the members of a Local Board of Health and its officers, it is essential that such be selected on account of some special qualifications. As, however, the possession of necessary qualifications must have been attained by special study and experience, it seems quite evident that the first member of such a Board should be a medical man carefully trained along public health lines. Naturally he should be supported by one trained to interpret the meaning and application of the law to the varied cases which may arise, and hence the County Judge might be associated with him as a second member of the Board. The third trained man would naturally be the chairman of the County Council, or the man, in fact, who has come up from the ranks to the position for the time being of chief representative of the people and guardian especially of their financial interests.

As it may be postulated that to-day with our wealthy counties such men ought not to be expected to do the work gratuitously, it is abundantly plain that it is only the larger cities that will be able and willing to pay for the whole time of the executive officer of the Board. So that in dealing with the county areas outside of cities, it is apparent that several of the rural municipalities, as townships, villages and towns must be united under one local health authority as in England. If we assume that in Ontario the riding area set apart for a member of the Legislature, which usually has some 25,000 of population, is a good working unit, it would appear that the Local Board of Health should be composed of the Medical Officer of Health, the County Judge and the Warden or Chairman of the County Council. Such a Board being composed of officials, could meet as the emergency demanded, while in the interim the routine health work would be carried on by the Medical Officer and his Inspectors in the smaller municipalities. It is plain that such an officer must be trained, not alone in medicine but also in the legal bearing of many problems, while necessarily he must prove to be a good executive and financial officer. He would report to his Board and would be readily in consultation with the County Judge whenever necessary.

Such a man, properly trained, must also be properly paid, and must further have security of tenure of office ensured. To lessen the local pressure which some temporary agitation in health matters often creates, it would be well that the Provincial Government, as with County School Inspectors, should pay a proportion of such officer's salary, with power to review on the one hand the thoroughness of local health work, and on the other to hold an investigation before a judge and have evidence taken and cause shown before a medical officer could be displaced. This principle of grants-in-aid has existed in Ontario and other parts of Canada in the matter of school expenditure and is increasingly being utilized in England to encourage municipal effort and promote governmental supervision. Were this adopted as a routine practice the proviso might naturally be inserted in the Act, that payments to the County Board of Health would be made based upon a certificate of the Secretary of the Provincial Board of Health that a county had made provision for an adequate salary for the Medical Officer of Health and that it had supplied sufficient funds for carrying on routine public health work in its several branches.

What in essence then must the work of such a Board of Health include?

1. It must include an office staff sufficient to maintain prompt contact by telephone and correspondence with every municipal clerk and sanitary inspector in the county area and establish a thorough system of fyles and records for the whole district.

2. The Medical Officer of Health must be provided with a laboratory well equipped for both chemical, bacteriological and physical investigations.

3. Such Medical Officer would have on his staff as registrars the municipal clerks

of the smaller municipalities and one or more sanitary inspectors in each.

4. The local officers, as well as the central office, would not only receive, but also act upon reports of outbreaks of contagious disease, and of unsanitary conditions in their particular areas, at the same time notifying the Medical Officer of Health for further instructions regarding isolation and disinfection.

5. As Medical Inspector of Schools the Medical Officer of Health would come into close touch with all the families of his area and begin what would become gradually a tabulated census of a whole population and of much value in later studies.

6. He would investigate every local industry, especially dairies, cheese factories, creameries and canneries, also the safe and sanitary construction of buildings and methods of production and conservation of the food products, as well as enforce all known methods to be used to prevent nuisances.

7. Both through qualified veterinary inspectors and the laboratory the Medical Officer of Health would investigate the health of animals as regards contagious diseases, affecting milk and meat supplies; while local outbreaks would be dealt with as promptly as are contagious diseases in persons.

8. As in many counties the health laboratory would be the only one properly equipped for purely scientific work, the Medical Officer would naturally become the medical examiner for his area in all cases where the coroner would order an enquiry into a death due to some suspected unnatural or illegal cause, and so at once correct the present situation, where a post mortem serves often to obstruct through clumsy or inexpert examination, rather than facilitate the course of justice.

9. Since the practice is rapidly developing of having in county areas at least one sanatorium for cases of tuberculosis, whose management will naturally come under the County Medical Officer, and as no more convenient nor necessary means can be found for a county officer keeping in touch with the local medical profession than a laboratory, where, in addition to the routine examination of swabs, sputum, etc., he can examine pathological specimens by definite arrangement, it is evident that an amount of work properly belonging to a county officer has been outlined, which, if performed, would entitle such an officer to the position which a medical officer of health ought to hold as the most elevated and important office in any community. But were such officers appointed for every county in Canada with power to do really effective work, they would form, as in England, the most useful and influential body of professional men in the whole country. Through meetings and common discussion they would determine causes inimical to public health, and by scientific co-operation would act for their prompt or gradual suppression. They would become the adviser and confidant of every practising physician, veterinarian, school inspector and teacher in the district; while to the producer and business man they would in proportion to their knowledge of scientific industrial processes, increasingly become the guide, counsellor and friend of all who desired to progress and the uncompromising critic of all who allowed manufacturing methods to remain unsanitary. When the many millions to be saved through improved sanitation, whether of men or of animals, is considered; when the loss of millions of dollars, which might be annually prevented by the development of more scientific methods in the production and preservation of food products is effected, and when the ideal of all public health workers and of all good citizens approaches realization, then will the prophet's dream be fulfilled in a sanitary sense: "The wilderness and the solitary place shall be glad, and the desert shall rejoice and blossom as the rose."

VITAL STATISTICS PERTAINING TO INFANT MORTALITY

By ROBERT E. WODEHOUSE, M.D.

MEDICAL OFFICER OF HEALTH, FORT WILLIAM, ONTARIO.

Last year I assumed the position of Medical Officer of Health of Fort William, and was the only salaried person associated with the Health Department except the nurse in charge of the Isolation Hospital. I at once gained an appropriation from the city and established a laboratory for examination of milk and water, and endeavored to do three things during the year: 1st, "To connect up as many houses with public sewers as possible." 2nd, "Inspect and improve facilities for care of milk." 3rd, "Watch the handling of fresh meats."

When the infant mortality suddenly reached such proportions as I shall show you shortly, I found myself and department absolutely helpless to meet the contingency or remedy same at once. From that time on I have endeavored to arm myself with more effective machinery and more help. I drafted a compulsory sewer connecting by-law which gives the city power to cause unconnected houses to be vacated until connected and permits the city to do the connecting.

I had a milk by-law prepared taking every power to ourselves as a city, that

Plan of Fort William, Ontario. Stars indicate Anglo-Saxon babies referred to, and the round marks babies of other race.

Read at banquet given by his Worship Mayor Twaits "to all those who are actively associated with infants," June 7th, 1911.

the New Ontario Milk Act permits.

I obtained a sufficient grant to pay a District Health Visiting Nurse to go to the homes, to search out the cause of the trouble, and show the mothers how to protect their babies, babies' food and point out the dangers involved if they neglect same.

And the Board of Health has appointed a Sanitary Inspector, given him an outside assistant and the Health Office a lady stenographer.

72-8 are still living at the end of 24 months.

Of the 1,470 available children under three years of age in our city, 82 die annually of intestinal disorders, or 55 per 1,000.

Considering elements which tend to increase or decrease of child population: New York, before milk depots were opened, had an infant mortality of 136 per 1,000. In 1910 it was less than 50 per cent. of this. Sandhofen, Germany, had an average death rate for 5 years of 46

INFANT MORTALITY IN CITIES.

	Population	Total Deaths 1910.	Deaths per 10,000	Total deaths under 1 year.	Deaths under 1 year per 1,000.
Seattle	237,194	2,462	10.37	374	
Toledo	168,497	2,090	12.40	374	2.22
Minneapolis	301,408	3,734	12.40	624	2.07
Spokane	104,402	1,357	13.01	232	2.22
Milwaukee	373,857	5,199	13.90	1,369	3.67
Cleveland	560,663	8,054	14.09	2,058	3.67
Los Angeles	319,198	4,272	14.24	484	1.52
Oakland	150,174	2,021	14.51	325	2.16
Rochester	218,149	3,212	14.73	446	2.04
Erie	67,525	1,005	14.88	199	2.97
San Francisco	416,912	6,305	15.12	705	1.69
Detroit	465,766	7,542	15.18	2,033	4.37
Chicago	2,185,283	33,241	15.21	6,885	3.10
Syracuse	137,249	2,124	15.48	420	3.28
New York	4,766,883	76,742	16.09	16,213	3.40
Buffalo	423,715	6,940	16.37	1,641	3.87
Boston	670,585	11,000	17.30	2,225	3.32
Philadelphia	1,549,008	26,879	17.35	5,232	3.37
Baltimore	558,485	10,753	19.25	2,148	3.84
Montreal	456,300	10,211	22.40	2,964	6.52
Fort William	20,000	327	16.35	121	6.05

For the basis of the following statistics I am indebted to the Buffalo Department of Health; the short excerpts which follow are principally from *The Public Health Journal.*

Fort William's general mortality compares very favorably with other cities enumerated, but in infant mortality it is second highest. Stillbirths, 21, are included, also non-residents.

Ontario's 1907 death rate for 1,000 babies born is 196.

Ontario's 1908 death rate for 1,000 babies born is 153.

Fort William's 1910 death rate for 1,000 babies born is 175.

Of 100 babies born in Baltimore, 75 are still living at the age of twelve months. 70 are still living at the end of 24 months.

Of 100 babies born in Fort William, 76-3 are still living at the end of 12 months.

per 1,000 under 2 years, where later pasteurized milk for most of the babies gave a 9.2 rate per 1,000 and pasteurized milk for all babies—gave a goose egg.

And at Karlsruhe the death rate was reduced from 26 to 16 per cent. by pasteurizing milk for one-fifth of baby population.

Prof. Jacobi, New York, speaking on the preservation of child life, says: "Give no raw milk." The report of New York Board of Health states that 5,000 of the 7,000 deaths of infants from intestinal troubles are due to flies. While the report of Dr. Helen MacMurchy, quoting Dr. Newsholme, points out that "deaths mostly are in crowded centres of population, among the poor and women who work for a living."

We, however, in Fort William, do not have to contend with such congestion of population as the following statistics dem-

onstrate. In fact, deaths here are highest among the better class of citizens, educationally, and in most sanitary portion of city, because sanitation is not taken advantage of as sewers galore have existed without private house connections.

The infant mortality of Fort William in 1910 from intestinal diseases was 82, or 4.31 per 1,000 population, the deaths occurring as follows: May, 3; June, 1; July, 35; August, 28; September, 9; October, 5; November, 1; or 82 deaths out of a total death rate from all diseases of 121. 70 of these 82 deaths have sufficient facts recorded to warrant classification.

June 2, one taken from train in transit; July 30, two non-residents; August 31, two non-residents; September 7, one non-resident. (These deaths were registered, but not chargeable to Fort William).

We have 63 cases for July, August and September, as follows:

Month	Northeast of Simpson		West of Brown.		Centre of city.	
	Anglo-Saxon	Non-A.-S.	Anglo-Saxon.	Non-A.-S.	Anglo-Saxon.	Non-A.-S.
July . . .	0	7	2	2	12	5
August . . .	1	3	3	1	18	3
September . .	0	1	0	0	3	2
Totals . .	1	11	5	3	33	10

For my own satisfaction I made a list of the addresses from the register of deaths, of homes where babies had died, and visited these homes, questioning the mothers as to source of milk supply, history of feeding of child, and methods used in preparing the artificial food.

I found not one breast-fed baby had died from intestinal trouble. Many got their milk from a single cow, owned by a neighbor. Some were supplied by large dairies. Some fed prepared milk in different forms.

Not a single case had an exact changing formula according to age for modifying cow's milk. I did not learn of one case, the management of the modifying of milk for which was under the constant care of a physician.

Two cases had been allowed green uncooked fruit to eat.

One had been fed at three months with half a common soda biscuit in each feeding, by an anxious and apparently intelligent mother.

One had been given two feedings in morning of sweet milk and the remainder of the day's feedings were from sour milk, as no cool place was provided for the milk.

Each case presented some variations of the above or similar gross discrepancies, showing absolute lack of knowledge of the dangers of improper feeding or what was proper.

19 per cent. of deaths were in area 1, northeast of Simpson street. (Foreign population). 12 per cent. were in area 2, west of Brown street; 68 per cent. were in area 3, in centre of city.

25 per cent. of the city's population is in area 1 (5,000 people); 15 per cent. is in area 2 (3,767); 60 per cent. is in area 3 (12,031).

The death rates were: Area 1, 2.4 per 1,000; area 2, 2.16 per 1,000; area 3, 3.50 per 1,000.

61.9 per cent. of deaths were Anglo-Saxon people, 38.1 per cent. not Anglo-Saxon people.

One-third of deaths occurred in non-sewered part of city where hygiene of city is at its lowest. Two-thirds of deaths occurred in sewered part of city where hygiene of city is at its highest.

If we had the same prevailing methods of feeding the babies in the sewered part of the city as in the non-sewered part, we would have 50 per cent. of death rate prevented. Breast-fed mother's milk is the antidote for this condition of affairs, and since this ideal diet has been discarded in the better sewered part of the city, with hygienic conditions the highest, we must use every means possible to educate this section and others how to handle milk, the dangers to baby if milk is not handled with extreme care, and how to feed it to the baby.

The Board of Health granted me an extra nurse this year to visit the homes and by kindness induce the parents to cast off careless methods and adopt new and proper ones.

PREVENTION AND TREATMENT OF TUBERCULOSIS IN RURAL MUNICIPALITIES

By C. M. WHITE, M.D., Pittsburg, Pa.

The first question that naturally arises is: "Is there any necessity for special provision for suppression of tuberculosis in small towns and rural districts?" We have been taught that the rural district is the place of choice for recovery from tuberculosis, and, as a corollary to this, naturally comes the belief that tuberculosis cannot be plentiful in the place where we go for cure. The following table, which is applicable to all temperate zones, forms the best answer to this question:

The rural death rate is 11.6 per cent. of the total death rate as against 16.6 per cent. in cities.

(This ratio applies to England, Scotland, the United States and Canada.)

In Pennsylvania, however, this produces a large number of deaths. With 3,749,814 persons living in rural communities and a total death rate of 56,797, there were 4,446 deaths from tuberculosis.

It is a commonly accepted law that for each death we may reckon on three sick cases of tuberculosis living. For 3,749,814 of a rural population, then, in Pennsylvania, we probably had 13,338 cases that should have been cared for.

Such statistics, however, make little impression on people of other localities, and nothing is more true than the necessity in all such work for bringing the discussion home to the locality. This, unfortunately, I am unable to do just now for Ontario; but the necessity opens up the first problem which must be faced by any given state before considering any equipment for this work in rural communities.

As the first requisite I would place a careful stock-taking of the number of cases to be dealt with, the location of these cases, the danger of infection to others, the stage of disease, the means which the sick or their friends have with which to combat the long period of sickness, and similar information, all carefully prepared in chart form so that a judicious plan for future work can be promulgated.

In whose office lies the responsibility for such a stock-taking? Undoubtedly in the Provincial Board of Health's, where lies the care of rural health.

While impressions are scarcely to be allowed here as argument, still I cannot forbear the statement of the impression of dire need in rural communities and small towns for some immediate action in this field of work by the Provincial Health Department in all provinces. In a small neighboring town I have been familiar with conditions for a number of years. I have seen case after case succumb to tuberculosis with not the first attempt at care in the protection of others. I have seen whole families wiped out when it is reasonable to suppose, from the experience of other families in which care was exercised, that some, if not all, might have been saved. I have watched the cases diagnosed late in the disease shipped away to climates no better than the one in which the sickness developed, and the local doctor throw up his hands in despair at the expected outcome. I have seen those cases return improved, arrested and cured, and same thing happen to the same physicians again and again. The lesson was not learned, but if the case had been cared for and had progressed to recovery under proper conditions at home, it is probable that not only the doctor but the whole immediate neighborhood would have learned much of the valuable lesson of cure and prevention of tuberculosis.

This leads to the second problem in the handling of rural communities in the matter of tuberculosis, *i.e.*, the necessity for some means of provision for local object lessons in the matter of cure where all in a given locality may profit by it. I am sure it is true that while urban communities have many advantages in the way of education, yet rural communities make more efficient and valuable use of what is within their reach in the way of educational advantages. They assimilate it more

Read before the Canadian National Association for the Prevention of Tuberculosis, London, May 17, 1911.

quickly because they do not suffer from surfeit.

A year ago I boarded a Grand Trunk train near London, and for an hour of my journey conversed with a man of wealth and more than ordinary intelligence from a small and beautiful town in the Province of Ontario. I remarked to him how necessary it was for some steps to be taken by towns and counties to handle such diseases as tuberculosis in the districts which they had jurisdiction over. He answered that if they attempted to establish any such provision near his home that he would strenuously oppose it with all means at his disposal. As he left the train I longed for the power to convert his antagonism into an enthusiasm in the opposite direction. He was perfectly willing in his ignorance to ignore the fatality going on around him rather than attack the malady at its source and help to provide a healthy community. A study of his attitude, however, lays bare one of the most potent obstacles to progress in this field of work, i.e., the great fear of tuberculosis which pervades the healthy, and ignorance of the masses of the simple laws underlying the prevention and cure of this disease.

This suggests the third step of importance in handling tuberculosis in rural districts: The provision of a thorough systematic campaign of education carried on persistently among those susceptible to education. I am more and more convinced that such education should be carried on through the schools — aiming at maturity — trusting to what these can accomplish in the homes, for the adults are more often than not convinced of their own superiority of knowledge and no longer susceptible to change of attitude.

If we are willing to grant the necessity for care of the tuberculous in rural communities, and this our opening paragraph furnishes ample foundation for, and accept what I have offered as the simplest necessities in the operation of some scheme which will secure results in such localities, i.e., (1) stock-taking, (2) local provision for care of cases, and (3) education, you have a right to demand of me that I go more into detail on the nature of procedure.

The duty and responsibility, as I have said above, is with the Provincial Health Department, and its local agents, the municipal and county health officers. Have you five in Ontario in the small municipalities and rural districts that you can point to with pride and say of any one: This man has done what he could to suppress tuberculosis. What could he do? He could use the talent God has given him. First, secure the aid of the local paper in spreading the knowledge of prevention, or give simple talks in the schools, or secure the pamphlets of the Canadian Association for distribution, or secure speakers, for public meetings, or secure an exhibit. Many of them may say the newspaper will not do it, or the school board will not allow it, or who will pay? I doubt if there is a newspaper which would not rejoice to join in such work. Try them once, you county officers. And school boards — 99 out of 100 of the teachers and school boards would welcome the offer. Why is this not done? Because we have, as a rule, the wrong kind of officers. They are built on the passive, not on the active plan. They require outside force to move them. They do not realize that even a little active work in this and other preventive fields would make them. They have both power and authority and make little use of them, while organizations such as this and our local organizations, have power and no authority, and yet see by London, Hamilton and Brantford what they accomplish. Who is responsible for the apathy of our local officers? Both we and the Provincial head of the Department of Health. We submit to their appointments, when, if enough of us were of one mind, we could at least have a health officer to guard our health and the health of our families. The provincial head is to blame because he allows the apathy to persist. How could he help it? These officers are, as I told you, only faulty because of passivity. If some outside, active power stimulates, they will act, and often act very well. The preferable sources of this power is the head of the department, and he could with great gain follow the lead of other states in establishing health officers' schools, in which quarterly, semi-annually, or even annually, their officers are gathered together for education, report and instruction for a given ensuing period. This applies not only to tuberculosis, as you will readily see,

but to all questions of public health. Soon the poorer ones will drop and the talented ones will develop, and if the proper power is moving it will not be long before each quarter of the province is guarded by an officer who understands the necessity for stock-taking, education and provision for cure.

It is so simple a task for the province to lead in this field, equipped as it is with funds and authority. The cry from the exchequer will be: We have no money for this; but even a tyro could show them, if they were not blinded, how a small expenditure of money can save a great annual loss. So often our leaders are trammelled with the teachings, limitations and superstitions of youth which they carry with them to their high office. No superstition is more common than that consumption is a family curse, sent by God and consequently to be borne without complaint. I have heard this expressed by one of your own great political leaders in recent years. I can prove, I think, to all who wish the proof, that this is not so.

If the head of the department cannot be convinced of the necessity of this attitude and responsibility, then local voluntary organizations must continue to carry on the work as they have done in the past.

The latter valuable acquisitions to modern health work must never lose sight of the fact that they are powers without authority, and that both are needed to secure successful operation of this work, and all efforts that neglect this great principle fall to a great degree. So, as advice of the first importance, I would urge you each and everyone to be dissatisfied and unhappy until you have health officers of active material in sympathy with your movement. Make this one of the chiefest planks of your platform.

The objections I frequently hear raised that legal provision is necessary before many of the things we desire can be done, I am convinced is invalid. It is more a matter in such things of doing right and doing as much right as the people will stand, than of having a clear-cut legal permission for the act. One of the best leaders I have known followed this course. The question immediately follows: What is right? If proven to give best results in other places this field—what is right—is what has been a quarter of a century ahead of us. Legal backing will follow fast as soon as the right has conquered in the minds of enough of the populace, and all that is wrong is bound, sooner or later, to fade away.

In many places, then, what has been responsible for progress in this work in the past must go on — the labor of these great forces for good, the voluntary organizations — these are usually led by some few who have passed the others in intelligence and education, perhaps often forced upon them by sad experience.

The duty of the Canadian Association is to secure such leaders in each community —leaders who will gather around them a group of workers to form a local society. The first duty of the local society is education. Education in the schoolroom with some pamphlets as I show you here and regard as the most efficient, least expensive, and most remunerative. We have used them with great success for the past few years. A little effort with the teachers will enable you to quickly reach the whole community through the children. The advantage of such a scheme is that the audience is ready, the room is ready, the audience is susceptible, and the audience possesses all the potentiality of the community. In addition to this, a travelling exhibit for the schoolroom and a lecturer who gathers special audiences to gain what immediate results can be obtained with the adults in the care of those already sick, and in legislation and appropriation of funds for the care of the sick in localities Education in the schoolroom I regard, however, easily first in importance and returns in the matter of prevention, for what the child persistently desires it frequently gets, and if it desires preventive measures against sickness in the home, it will follow sooner or later.

As a result of this education there follows the necessity of local control of and provision for those already sick. I am convinced this must be a local affair. The day of large district institutions has had its death knell, and the local autonomy and provision for advanced cases is surely the present cry built upon both economy and common sense. Such places near the largest centre of population in the locality, are but a step from the beginning of educa-

tion. There should be small county hospitals, or a building attached to some existing hospital, upon some uniform plan and under provincial health authority government. From such places education can readily be sent to the home of the sick, and attached to such places in the neighboring town can be a dispensary as a clearing house and control centre for a wide district. This is not a matter of great expense. In the dispensary from the beginning will be established the record of your stock-taking; but along with it must go your record in the county health office or the provincial offices. These cannot long resist the constant dropping of a postal card, and a politician is afraid of nothing so much as the growing intelligence of his uselessness in his community, and he will soon become active to such a stimulation or give place to some one more able than himself.

Do not forget that the object of this education and work is the management of this one problem, and all similar problems, by power plus authority, which alone resides in our municipal, county and provincial governments, and these must be educated to accept the duty, and may the day soon arrive when some at least of our provincial and local officers will see the golden opportunity of leading in this work and of utilizing all such methods of education leading up to local autonomy, and of the permission open to them of joining the goodly company of the charitable gathered in our local organizations, and so uniting their authority to this great power for the weal of the locality in which they operate.

THE CONTROL OF CONTAGIOUS AND INFECTIOUS DISEASES IN OHIO

By FRANK WARNER, M.D. Columbus, Ohio.

Recently a card was sent out to all the health officers of the State of Ohio, containing a list of infectious and contagious diseases which were requested to be reported to the State Board of Health. The object of this was that the board might be in more intimate and prompt touch with these diseases as rapidly as they developed. Even though some of these diseases are not quarantined, yet the board can frequently be of service to the various localities by knowing where these diseases are, and lend its aid in locating the cause of the outbreak of the various contagious and infectious diseases. If the board is notified promptly of the trouble, it is a more simple problem to extend efficient aid before time has elapsed to permit a real epidemic to gain foothold. It is but reasonable to suppose that the executive officer of the board, whose business it has been to study the causes of these various diseases and the best means of controlling them, should be better able with the board's extensive laboratory equipment and efficient experts who do the work in the laboratories, to give prompt assistance in preventing various epidemics if reported early, than where a local authority deals with these problems single handed at the outstart.

I notice upon the list sent out the following contagious and infectious diseases: Asiatic cholera, bubonic plague, cerebro-spinal meningitis, chicken-pox, diphtheria, measles, membranous croup, scarlet fever and whooping cough. The list does not pretend to cover a complete list of the infectious and contagious diseases, but only those that they desired to have reported when they arose in the communities. It was in these diseases that the board felt they could be most helpful in controlling them.

Another infectious disease, yellow fever, while of great importance to health officers in southern ports, has never gained foothold in Ohio. Influenza is too little understood to stay the epidemics which occasionally sweep this country. Pellagra

has not developed to an extent in our State to call for action of our health officers. Another disease which is now thought to be both infectious and contagious, and one which is attracting the attention and action of health authorities in some States, is acute infantile spinal paralysis. It has been found that it occasionally breaks out in given localities in considerable numbers, in much the same way that cerebro-spinal meningitis does. As the infectious character of acute infantile spinal paralysis subsides with the fever which accompanies the production of the paralysis, it is wise that such cases be isolated during their acute febrile career.

Syphilis and gonorrhœa, two infectious diseases that cause terrible destruction to life and cause untold misery, will call for the best efforts of the State at some time in the future. In different parts of the country some societies have already been formed to cope with these infectious diseases. Until recently, the argument has been to let those suffer who acquired the disease. There would be more justice in this argument if it were not for the fact that so many innocent persons suffer through the sins of others. Many young men who acquire gonorrhœa and suppose themselves to be cured marry a young, virtuous girl and infect her. The result often means some serious abdominal operation which unsexes the girl for life. The seriousness of syphilis may even extend to the unborn child through the mother. Perhaps as much as physicians can do at the present is to urge young men to see that they are thoroughly cured before marriage. They should understand that gonorrhœa is a disease that means severe trouble to the girl they marry unless it is thoroughly cured—the last vestiges of a discharge abolished, even the morning drop. This is a matter that is not generally understood among young men. These facts should be impressed upon them whenever opportunity arises. Try and prevent the young men from acquiring the disease, if possible; if not, urge them to find out that no gonorrhœa germs longer exist in the urethra before marriage.

Tuberculosis is an infectious disease communicable under certain conditions, which has been reattracting the vigorous attention of the medical world for some years. It may seem to some of the medical profession that the progress made in the prevention and cure of the disease has not been quite what they had hoped it would be. And yet great progress has really been made in both these directions. Now that the cause is so thoroughly understood, and so many societies formed, and hospitals built to cope with the disease, we may look for even greater progress in the near future, if, indeed, we may not reasonably believe that a remedy will soon be found to cure the disease in all its stages. We can all do something towards its prevention by informing people how to live who have the disease. That they should remember that the germ which produces the disease is in the sputum. That if the sputum is carefully disposed of there will be no danger of their communicating the disease to another. That they should not sleep in the same bed with another, even if they sleep in the same room. While fresh air is important in the treatment of the disease it becomes doubly important to have ample ventilation in a room which is shared with another that they too may not acquire the disease through concentration of the germs in the room by lack of fresh air.

Hospitals for the treatment of this disease have been established in many counties of the State. Many of the counties have not availed themselves of the privilege the law has given them to construct them. The State has a fine sanatorium which is in operation in a limited way, expecting to be in full sway within a short time.

Among other things, better living conditions are required to aid in the prevention of the disease. This means a sanitary home, one free from dampness, and constructed so as to give ample light and free ventilation. But the employment of ventilation devolves at last upon the occupant of the home. In the cities greater demands are being made upon landlords to construct more sanitary homes for their tenants. Perhaps some of the less densely populated places will profit by looking after the problem of more sanitary homes not alone for those who rent, but also for those who own their own homes.

Cerebro-spinal meningitis has been proven to be clearly an infectious disease

which is contagious or communicable under certain conditions. Just what those are is not clearly understood. The best that can be done at present is to isolate all cases of the disease. The isolation should be prompt and decisive. It is not sufficient that most people visiting the house be kept out of the sick-room, but it should include all who are not absolutely needed in. This advice especially applies to those who have children back at home. This advice is not always sufficiently regarded by some who do not fear the disease and by others who do not believe in its contagiousness. Even though it may finally be shown that it is simply infectious and not contagious, it is better to carefully isolate all cases of the disease. We can only act in the best knowledge that is before us, and it is better to err on the side of safety. It is unlikely that isolation will prove useless in the prevention of the disease, even though the disease were not contagious. The same conditions of infectiousness still exist in the home where the disease first developed. Perhaps back at another home these conditions do not exist. So, above all, keep children away from cases of this disease wherever it is possible to do so.

Measles and whooping cough result in many deaths, especially in the very young. Still, there is an impression, which is rather widespread, that it is better for children to have the various diseases of childhood when they are young. This belief is based upon the fact that in some epidemics, of measles especially, the disease has proved rather disastrous, if not resulting in death at least being associated with some complications of an undesirable character, both in men and women. In the adult, inflammation and destruction of a testicle in men, and a like complication in the destruction of an ovary in women, or, perhaps, simply an inflammation of that part. Still, these are unusual complications in the adult. In the first place, it is unusual for adults to take these diseases under ordinary conditions. Adults seldom take whooping cough, even though they have escaped it in youth. Many deaths result from it in infants; pneumonia being a frequent complication in those of tender years. Both these diseases should not only be reported to health authorities, but they should be isolated until the period of contagion has reasonably passed. The practice of many children with the whooping cough being allowed to run the streets or ride in the street cars or steam cars should not be permitted. If found doing these things they should be checked, by peaceable means if possible, by forcible means if necessary.

No physician objects to reporting smallpox to the health authorities nor having those cases subjected to a strict isolation. That is provided he has satisfied himself beyond question that the patient has smallpox. There is no objection to this, but there is an objection to his carelessly diagnosing cases of smallpox as chickenpox. Of course, this has not been done intentionally. I think frequently physicians jump at the conclusion the eruption is one of chickenpox without sufficient thought that the case may be one of smallpox. Many cases of smallpox are mild, making it rather difficult to differentiate between the two. The mild cases of smallpox are even more liable to start an epidemic than severe ones, because the patient is physically able to run around in the mild form, but is confined to his bed in the severe cases, thus isolating himself. All cases of chickenpox should be reported. If this is faithfully done the attending physician will be more careful that the disease really is chickenpox and not smallpox. Then it gives health authorities better opportunity to be of assistance to the attending physician in canvassing some of these cases. If they are of an obscure character, experts are sent out who naturally are better able to decide between smallpox and chickenpox by reason of their seeing many of these cases all the time compared to the usual attending physician, who may seldom see a case of smallpox, if, indeed, he has ever seen one.

Diphtheria has come to be so thoroughly understood by the general practitioner that little difficulty arises through the State by reason of his negligence in reporting cases or incompetency in treating them. However, he is occasionally guilty of regarding mild cases of diphtheria as those of tonsilitis. Even though these cases are mild, it is a commendable custom which some physicians follow of having a bac-

teriological examination made, especially if many cases appear in a given locality. This custom should be encouraged whenever possible. In some public institutions diphtheria has continued over long periods under the name of tonsilitis. It is not usual for tonsilitis to continue over prolonged periods, affecting a considerable number of people, more especially in mild weather. The spreading and continuing under all conditions of weather should suggest that the supposed cases of tonsilitis are really cases of diphtheria. An early bacteriological examination would have avoided the hold which such cases have sometimes gotten.

In the way of treatment of diphtheria, to the end of its prevention, the Ohio State Board of Health has established in every county of the State at least three or four depôts for the distribution of anti-toxin at a price not over one-fourth that which the people must pay in the open market for it. Many physicians are availing themselves of the opportunity to get this and use it in immunising those who have been exposed to the disease, but have not yet acquired it. It is sold through an order of the Health Officer in the given locality. This is doing much to check the spread of epidemics.

Membranes croup is diphtheria. It is simply a difference in location. It might with propriety be called diphtheria of the larynx.

I think it has generally become understood that the contagion of scarlet fever clings for a long time to anything that has been exposed to the disease. This is especially true of clothing and books. Many times clothing which has been about the sick-room and afterwards packed in a trunk, and long after transported, without sterilization of any kind whatever, has developed the disease in that manner. Books returned to libraries, or letters sent out under similar conditions, have communicated the disease. These facts naturally suggest the remedy. That great epidemics of scarlet fever no longer take place is due to the fact that health officers have had the unstinted co-operation of physicians in controlling the disease.

Nowhere has the brilliant work of sanitarians been better displayed than in the control of typhoid fever. Without the intelligent co-operation of the laity with the medical profession and health officers and public officials it is impossible to control this disease on a large scale. I know of no place where this harmony of action has better existed than in dealing with the different problems looking to the control of this disease. The problems involved in its control have often demanded the expenditure of large sums of money. I have frequently been surprised to see the alacrity with which these questions have been met. Oftentimes large sums of money have been authorized by citizens of the cities that their officials might make expenditures looking to the control of the disease when the idea was wholly altruistic. Notably has this been true where sewage disposal plants have been constructed that they might not endanger the water supply in the town below. They have often spent this money with even a greater willingness to aid towns below them than they were to improve their own water supply where they got the direct and immediate benefit themselves. This is certainly a noble tribute these citizens have paid to themselves for their broad humanity. But typhoid fever is not alone a water-borne disease. It is true, some of the worst epidemics have been caused by typhoid germ laden water, whether in streams, wells, or springs. Where an impure water is supplied to a town, typhoid has been a pretty constant factor for that community to deal with. While the water supply of any community is the principal thing to be considered in controlling typhoid fever, it is not the only one.

In every rural community when typhoid breaks out it is charged to an infected well or water supply. Frequently the charge is true. As you know, the typhoid germs that cause the disease are always contained in the stools of a typhoid patient. Now if it chance, as is so frequently the case, that these stools are thrown undisinfected into an unscreened privy vault in warm weather flies soon fill themselves with the offal containing these germs. From there they soon appear at the dining table or in the kitchen and alight upon food which is exposed to them, thus leaving infection upon it. There is no doubt that this is a frequent way of disseminating the disease. These same flies soon find their

way to neighboring houses, and in like manner infect some one or more members of those households.

At the time of typhoid in a family where the outside vault is used, it should be screened from flies. This may be done by a solid door covering the seat, or by a screen at the door, taking care at the same time that other loopholes are closed against their entrance. In addition to this precaution, it is well also to disinfect the stools before throwing them into the privy. In that way an adjacent well will less likely become infected.

Dairies have been frequent sources of starting epidemics of typhoid fever. I presume this occurs in different ways:—By using an infected water to wash the milk utensils; by diluting milk with the same kind of water; by the milk becoming infected with the typhoid bacillus through the agency of flies which have been revelling in typhoid filth. Dairymen themselves are coming to understand that it is better for them to co-operate with health officers in a way that will prevent a recurrence of these unfortunate experiences. In all rural communities where typhoid develops, watch the fly—not alone in its relation to the privy and kitchen, but also in its relation to the dairy, to the end that the milk may not become infected.

When infectious and contagious diseases develop in any locality it would frequently be of advantage if surrounding health officers were notified either by the local health officer or by the State Board of Health after they had first received this information from the local health officer. This would often enable the different neighboring localities to anticipate the development of these communicable diseases. And by anticipating them they could frequently head off the appearance of an epidemic in their locality. It would be of distinct advantage for a health officer to know of the appearance of typhoid in a dairyman's family who is delivering milk to that locality. It would even be of advantage to the dairyman himself. Because if the health officer into whose territory the milk was delivered could say to the families receiving this milk that everything was conducted in a sanitary manner the dairyman would be held blameless. Without this additional precaution he would often be unjustly blamed. While this multiple examination or inspection of the dairy might occasion some little friction occasionally, it could at last only result in good.

Everybody's interest lies in controlling contagious and infectious diseases, and it is only by the co-operation of everybody that these can be controlled.

Editorial

Report of the Committee on Public Health of the Commission of Conservation on the Ottawa Typhoid Epidemic.

The thoroughness with which the appointees of the Committee on Public Health of the Canadian Commission of Conservation prosecuted the work of investigation into the causes of the late epidemic of typhoid fever at Ottawa is manifested in their report on the subject now published.

The report—which is signed by Charles A. Hodgetts, M.D., Medical Adviser to the Commission; R. W. Bell, M.D., Medical Inspector of the Ontario Board of Health; G. C. Jones, Colonel, Director General of Medical Services, and Lorne Drum, M.D., Major, Permanent Army Medical Corps, General Secretary of the Canadian Public Health Association — is excellently presented in 28 pages, accompanied by numerous illustrations and appendices, consisting of maps, letters and subsidiary reports.

In a summary statement, the immediate cause of the typhoid epidemic which was recognized in Ottawa on January 1st, 1911, is located in the water supply infected by polluted matter coming mainly from the south shore of the Ottawa River in the vicinity of Lazy and Nepean Bays; the infection having found entrance through the emergency valve at Pier No. 1, whenever opened and possibly through joints on the intake — the old aqueduct here being improperly used as a sewer from September, 1910, to the middle of January, 1911. In order to arrive at these conclusions an epidemiologic study of all cases reported between January, 1st and March 18th, 1911, a total of 901 out of perhaps 1,200 existing, was undertaken together with a sanitary survey of the premises where such cases had been reported; a sanitary survey of the north shore of the Ottawa River above the intake to, and including the town of Aylmer; a sanitary survey of the south shore above Pier No. 1, including Brittania on the bay; a study of the milk and other food supplies; an inquiry into the sewerage system; an inquiry into the water works system, including the pump-house intake at Pier 1, and the operation of the "emergency valve" situated at the latter point, as well as the old aqueduct; an examination of the plumbing in some of the infected houses, and a study of meteorological and other climatic conditions.

In the report, the typhoid fever mortality tables in Ottawa and Hull from the year 1901 to 1910 are compared; and the mortality for 1911 considered, after a classification of cases by sex and groupings by place of birth, occupation and place of treatment. Of the 901 cases investigated, 52 are stated to have died before March 18th, when the inquiry ceased, a death rate of 5.7 per 100. While the sanitary survey of the Ottawa River, finding the south shore to be at fault, inspires a comment as to the danger from an intake suction system for domestic water supply. And this comment is followed by a full description of the surprisingly crude and extremely unsanitary conditions in parts of the city of Ottawa, with an analysis of samples of water taken from Nepean and Lazy Bays.

When considering food supplies, the report adverts to the fact that pasteurization does not destroy the toxins generated in any milk that may be infected — which, with equal logic also, we believe, would apply to the filtration and boiling of contaminated water. Foods, however, being questioned especially from the standpoint of their handling, are excluded as possible primary causes of Ottawa's epidemic, as are also the bad general sanitary conditions of many Ottawa premises. And it is pointed out that Ottawa was lucky from the fact that the seasonal conditions excluded flies and dust, which otherwise might have added largely to the seriousness of the epidemic.

It is surprising that a city of the prominence of Ottawa, or any Canadian city, should have been allowed by health officials to develop within her boundaries and in her neighborhood the unsanitary conditions discovered by

Dr. Hodgetts and Dr. Bell, Colonel Jones and Major Drum. These gentlemen found from a careful survey of the shores of Nepean Bay and points above that it was quite evident that polluting matter of both human and animal origin was reaching the Ottawa River. Open privies were found lining Cave Creek, which empties into Lazy Bay on the south shore; Cave Creek being shown to have existed for years past as a common sewer of the worst description for many hundreds of persons resident in Mechanicsville and Hintonburg. And to this were added the contributory factors, in the typhoid outbreak, of unusually low water during midwinter—the meteorological conditions whereby, owing to the shallowness, the river became frozen to the bottom in places, blocking some of the ordinary channels, and the freshet during the first week of January — the occurrence of typhoid fever in Mechanicsville last autumn — the opening of the emergency valve at Pier No. 1 — the pollution of the old aqueduct by sewerage — the possibility of pollution of the water in its passage from the intake pipe — and the effect of neglect to carry out Mr. Hazen's recommendation of October 5, 1910, regarding hypochlorite treatment.

Mr. Hazen had pointed out that, pending the installation of a proper water supply and sewerage disposal system, partial treatment of the water might be adopted with advantage, such partial treatment consisting of the use of hypochlorite of lime.

Finally, the report points to the cause of the continuance of the epidemic as in the main due to a continued contamination of water supply; and shows that after the hypochlorite treatment became effective in efficiently disinfecting the water on or about the last week of February (eighth week of the epidemic), there was a marked decrease in the number of cases displayed in the returns of the week ending March 11th (tenth week of the epidemic); the practical termination of the epidemic occurring in week ending March 18th, the eleventh week of the epidemic. The report concludes by saying that doubtless other secondary causes were operative after the epidemic had started, such as personal contact, the washing of uncooked foods and household utensils in the infected water; as well as the defective and general unsanitary conditions of many premises, following inadequate public health government and laxity of inspection.

Inter Alia.

Much has been written and said about unclean milk as the cause of many infections and contagious diseases.

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That milk may be the means of transmitting typhoid fever, diphtheria, scarlet fever and other diseases we have indisputable proof, so conclusive that no one who has made a study of the milk question will doubt it. Yet many people do not yet realize the importance of clean milk, and not until they do will there be a radical change in the quality of the bulk of milk that is supplied .

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We do not mean to infer that all the dairymen produce unclean milk, as there are many dairies that are the height of perfection. That our standard of milk might be more generally raised, we would suggest that systematic instruction with reference to the sanitary relations of milk as an article of diet, and other foods, be made a part of the curriculum of public schools. That popular articles be frequently prepared for the press by local Medical Health Officers; that lectures and demonstrations be given; that pamphlets in plain language be prepared for general distribution, and that rules and suggestions, accompanied by statements of the reasons therefor, be placed in the hands of dairymen and dairy attendants.

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A systematic sanitary inspection of dairy farms and milk distributing depots is essential for the production of a better milk supply. Examinations of many samples of milk have conclusively shown that conditions on many of our farms and at many milk depots are anything but ideal. Stables are poorly lighted, many having no windows whatever, and ventilation is not provided for. Little attention is yet paid to floors, ceilings, walls, or stable yards; swine, horses and poultry are often found in the same barn with the cows. Manure is not removed, or, when removed, is thrown through an opening in the wall or just outside the door, frequently near the

milk room. The necessary appliances for sterilizing and cooling in the milk room are often lacking, making it impossible to properly wash and sterilize pails, cans, bottles and other appliances, or to properly cool and hold at a low temperature the milk before delivery.

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Every consumer of milk has doubtless observed the presence of more or less foreign matter at the bottom of the bottle in which it is kept. This is a matter of such common occurrence that it hardly excites attention, and people are disposed to look upon it as a matter of course. Examination of this sediment in the majority of cases shows that it is mostly cow manure, hair, dirt, dust germs and other filthy substances — all of which are not only disgusting, but extremely suggestive of danger.

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It must be apparent that it will require time and education to secure compliance with even reasonable safeguards, and it is equally evident that the number of dairy farms now in a position to live up to sanitary requirements will supply but a small percentage of the population, although it is hoped that such dairy farms will be stimulated into existence by trade competition and the refusal of the public to buy dirty milk at any price.

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Until this is accomplished, health authorities should advise that no one patronize a milk dealer at any price whose milk after standing for two hours reveals a visible sediment at the bottom of the bottle. It is evidence of dirty habits, and entirely preventable by clean, decent methods without greatly increasing the cost.

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In many cases it is well to advise that all milk be subjected to home pasteurization, by bringing it to the boiling point, and after cooking it to keep the milk on ice in order to destroy germ life and reduce the chances of milk borne diseases to a minimum; and, if we can reduce our typhoid fever rate even ten per cent. by this simple method, not to mention infantile diarrhœa and other infectious diseases, it is clearly our duty to do so.

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Milk should never be sold by grocery stores nor milk shops unless it has been delivered to such establishments in original sealed bottles, and then only when there is provision for maintaining the milk at a temperature of 50 degrees Fahrenheit.

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Speaking of milk bottles, there are several makes of sanitary, non-refillable bottles that are good. The receptacles are made of paper, covered with parrafin and are water proof, and experiments have shown that they will stand heat and cold. These, when emptied, are thrown away, and the danger of dirty milk bottles is obviated.

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The glass milk bottles used by certain milk dealers cost in the neighbourhood of five cents apiece. The non-refillable wax-and paper cylinders, we believe, cost a little more than one cent each. The milk dealers state that the largest item of cost would be the change from glass bottles and the installation of the paper receptacles. But the difference in the running cost would be neutralized by the elimination of breakage and loss of glass bottles.

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The peddling of milk in cans is objectionable inasmuch as the cans are opened on the streets where dust and dirt is flying about. The health department opposes this plan and condemns it as unsanitary and dangerous. Many milk dealers are themselves in favor of the paper bottles as being more sanitary and in the long run cheaper than the glass bottles because of the heavy losses entailed through breakage and theft. Their only argument against the installation of the paper receptacles at once is the initial expense.

Library and Laboratory

Hygiene for Nurses.

We do not remember to have seen previously a work of so comprehensive a character in so small a space as *Hygiene for Nurses, Theoretical and Practical*, by Herbert W. G. Macleod. The information given therein is not only suitable for nurses, but in our opinion would add to the knowledge of many of our medical confreres and largely prevent that groping in the dark which has become a habit in many of our municipal councils.

Dr. Macleod points out that hygiene, otherwise known as "preventive medicine," "public health," "state medicine," is the science of the preservation of health and the prevention of disease, and teaches us how, under suitable conditions, life may be prolonged to its farthest limit. He shows that the preservation of health is of importance not only to every single person, but to a nation as a whole, and gives examples of the brilliant results which have already been obtained by the wider extension of this knowledge; such fatal diseases as smallpox, plague, typhus fever and hydrophobia, having been stamped out in many cases by applying the principles of public health, while consumption—that scourge which kills thousands of people in the prime of life every year — has been greatly diminished by proper ventilation, lighting, heating, building and drainage, by proper personal habits and the use of pure food and water.

The work is divided into eleven chapters, extensively and suitably illustrated, followed by an appendix regarding important Acts of Parliament, etc., relating to public health. The chapters are entitled, in order: Heating and Lighting; Water — General Sources of Supply; Water—Purification, Domestic Supply; Drainage and Sewerage; The Disposal of Sewage; Infection; Disinfection; Food, Milk, etc.; and Personal Hygiene.

Dr. Macleod gives a list of diseases resulting from impure air, points out fully the way to avoid these diseases by means of natural and artificial ventilation while naming six important conditions which should be fulfilled, and remarking that "it is essential to understand that neither draught nor chill is caused by proper ventilation." The constructive suggestions in this part of the work are very valuable, as they are, also, in the chapters dealing with Heating and Lighting, the Purification of Water, and the Disposal of Sewage.

Had the information given in this little work been possessed by some of our public health officials, the recent epidemics of typhoid in certain Canadian cities might not have occurred.

Under the heading "Water Filtration" it is pointed out that dissolved poisons cannot be removed by this method, and their presence, whether putrescent animal or vegetable matter, such as originates in metal works or dye works, is, or should be, guarded against by Acts of Parliament, etc., concerning the pollution of rivers and streams. And in this conection the question of the purification of drinking water by distillation in the home is discussed. *Hygiene for Nurses, by Herbert W. G. Macleod, B.Sc., M.D., M.S., Edin.; M.R.C.P., Lond.; D.P.H., Lond.; D.P.H., Camb. Crown 8vo., 233 pages, 48 illustrations. London: Smith, Elder and Co., 15 Waterloo Place, 1911. Price, 3/6 net.*

Hand Book for Medical Advertisers.

Apart from a few typographical errors and mistakes in classification, which, while annoying to those (our own experience) to whom they relate, we presume may be inseparable from a work of this kind, this is the best book for medical advertisers that we have seen, being well bound, comprehensive and full of otherwise reliable data regarding medical, drug, dental and allied journals published in Canada, the United States and other countries. It gives useful information to medical and drug advertisers and is a book small enough to be carried in the pocket. We congratulate Dr. Harrower, the compiler and publisher, upon the perfection of this, his most recent publication, and prophesy a deserv-

ally large sale for the same.—*Henry R. Harrower, M.D., 921-931 Schiller Building, Chicago. Bound in soft leather. Price,* $1.50.

Rural Hygiene.

A valuable addition to the Rural Science Series, published by the Macmillans in a volume on "Rural Hygiene," by Henry N. Ogden, C.E., Professor of Sanitary Engineering in the College of Civil Engineering, and special assistant engineer in the New York State Department of Health. The subject is treated from the broad standpoint that presents man's mode of living as reacting on those domiciled in this vicinity. Carrying human interdependence to its consistent conclusion, the author reaches the broad question of the cause of spread of disease and the transmission of bacteria, and the natural influences which, more or less under the control of man, affect a large area if allowed to develop. The point of view of the engineer leads him to quarantine, disinfectants and prevention rather than to etiology and treatment, especially as the new methods apply to the populations of the country, where authority is lacking and public hygiene, to a certain extent, must rest on a sense of honor.

Vital statistics are given and the way is pointed out to raising the standard of living, so that without specific laws, individual will or instinct may lead the normal countryman to live according to hygienic rule and in harmony with his environment. The chapter on diseases is especially informing. Pellagra, a complaint peculiar to the country and formerly supposed to be connected with spoiled corn, is hard to dislodge when once established, and is accompanied by intense suffering. It is common in Italy, and recently has made its appearance in the United States, where it is on the increase. The work will be found truly useful and well worth a careful perusal. — *Rural Hygiene, by Henry N. Ogden, C.E., Professor of Sanitary Engineering in the College of Civil Engineering and Special Assistant Engineer in the New York State Department of Health. New York: The Macmillan Company.*

A Study of Race and Environment.

The Jewish people being dispersed among the nations and living under very various conditions in every part of the world, it becomes a matter of great interest to ascertain how far they exhibit characteristics which may be considered peculiar to themselves and differing from those of the peoples in the midst of whom they dwell. The subject is very thoroughly treated in a recent work by Maurice Fishberg, of New York, entitled *The Jews: A Study of Race and Environment.*

In the author's opinion, the generally accepted idea that Jews are an example of an absolutely pure race is altogether erroneous. This view is likely to find little favor among his co-religionists, who have always been assured and proud of the purity of their race. It may, however, be said that the author is not alone in his opinion, which is held by many of the more thoughtful followers of the creed. The probability that, during the time polygamy was customary, there was a constant admixture of foreign blood cannot be ignored, and the author is undoubtedly correct in the assertion that at times large groups of strangers or even whole peoples have adopted the Jewish faith and have been absorbed into the race. At the same time, it must be remembered that for many centuries the rule of monogamous marriage has been generally adopted, and that since the Middle Ages at least, there has been little intermarriage with other races until within quite recent times. The author calls attention to the absence of a cranial type common to all Jews, and asserts that every variety of cranium has been found among them, from an extremely round head in Caucasian Jews to heads of an equally marked dolichocephalic character in those of Africa and Arabia, the prevailing type in every case resembling that of the people among whom they dwelt. This would seem to go far in support of the contention that there has been a mixture of race, but the author is on less sure ground when he cites the variety of stature and complexion in support of his view. It cannot be held to be by any means certain that changes in habit and conditions of life may not have their influence in producing the varieties mentioned. Marked increase of stature, for instance, has been observed in the

course of only two or three generations in Jews whose parentage was known when there had been no mixed marriages.

As might have been expected, the author, holding the view stated, finds few, if any, characters which he considers could be described as Jewish. The chief pathological characteristics are held to be a somewhat undue liability to suffer from diabetes and insanity. This Mr. Fishberg puts down to a general nervous instability, and he is, no doubt, quite correct in assuming that the hardships and persecutions to which the bulk of the people have been exposed for centuries, have produced an hereditary tendency in this direction. It is also noted that, these diseases being more common in urban populations and among those engaged in exciting or hazardous business pursuits, Jews, who belong largely to these categories might be expected to show a larger proportional morbidity, and that it is not necessary to assume any racial tendency. The comparative immunity from tuberculosis which has been remarked in English Jews is shown to obtain in every country for which statistics are obtainable. This the author ascribes to a process of natural selection by which the Jewish race, accustomed for centuries to live in crowded and insanitary quarters of large cities, has acquired a special capacity for resisting the adverse conditions resulting from such a life. It is, however, probable that the freedom from a tendency to alcoholic excess plays a considerable part in giving an increased power of resistance, and it is noteworthy that consumption has of late become more frequent among Jews in New York, as well as in London, while many observers are of opinion that they are more prone than formerly to adopt the habits of their neighbors in respect to alcoholic indulgence.

As regards cancer, Mr. Fishberg seems to incline to the opinion that there is neither immunity from, nor excessive tendency to, this disease. He states, however, that several gynaecologists in New York have given him information as to the rarity of cancer among Jewesses. This is certainly not the case in London, where, allowing for the difference of age distribution, cancer appears to occur as often in Jewesses as in women in other sections of the population. As to other diseases, the author finds no difference in the morbidity or mortality among Jews from that obtaining generally in the locality where they reside. Their special tendency to suffer from diseases of the gastro-intestinal system is considered to be confined to functional disorders. This again somewhat differs from the conclusion to which the English recent statistics would seem to point. In addition to the subjects referred to, there are interesting chapters on Jewish criminality, and on their social and economic conditions. Altogether the book is a careful and almost exhaustive account of Jewish characteristics; the bibliography and index at the end are remarkably full and complete. — *The Jews: A Study of Race and Environment. By Maurice Fishberg. London, New York, and Melbourne: Walter Scott Publishing Company.* 1911. (*Cr. 8vo. pp.* 597. $1.75.)

The Dangers of Dust.

An article on street sanitation in a recent number of the *New York Medical Record* says that a much needed campaign of education must be carried on to train the people to fear the dangers of filthy streets and to enlist their interest in keeping them clean; that it ought to be possible to stop the shaking of dust-cloths and rugs from the windows and the sweeping of dirt into the street. To this should be added the custom, offensive to the eye at least, of throwing paper into the street, and it should be the duty of the police to demand an explanation from the occupants of the houses in case newspapers or rubbish are found on the street or sidewalks.

The writer holds that the broom and shovel method of dust removal is unsatisfactory, resulting in stirring up the dust rather than in taking it away. Two efficient methods for taking away the dust are given. The first of these is by flushing the streets, carrying the dirt to gutters and sewers, and the second by means of automobile suction cleaners, a method which is available on all smoothly paved streets for the greater part of the year.

A Proposed Measles Research.

A forthcoming research of public health importance is announced by the *British Medical Journal*, which states that Mr. Howard McFadden, a well known English

philanthropist, proposes to set on foot a plan for thoroughly investigating the origin and spread of measles; moreover, that the work involved will take place at the Lister Institute at Chelsea. In making this announcement, the organ of the British Medical Association emphasizes the fact that, "Rich men cannot devote their wealth to a better purpose than the furtherance of scientific knowledge which will help to rid mankind of scourges such as measles, that, in addition to the immediate suffering which they cause, levy a heavy toll on the rising hope of a nation, and thereby tend to undermine its efficiency."

Free Health.

Frederick Aling, in *The Survey*, points out that free education was once considered radical, but it was followed by compulsory education as neither charity nor justice, though free schools began as charity. It was protection, for revenue only, for society saw that ignorance was costly and dangerous.

Free health is now as radical, but it will come, and compulsory health will follow. No child is now allowed to be ignorant, whether its parents are willing or unwilling; but disease is both more contagious and more dangerous than ignorance. Conversely, health is more precious than knowledge, both to the individual and to the community. The tenement father who sees his boy go through the grammar school, and then die of tuberculosis, would rather have a live son than a wise one. The wages of unskilled labor in the tenements do not permit of health, but education is given free. Which would any father choose for his child? Which should humanity or policy, first give?

Public health is quite as important to the community as public education, and we shall at some time have free doctors as well as free teachers, leaving the private doctors, like the private schools, for the few who can afford them and prefer them.

The Influence of a Tropical Climate on Europeans.

Dr. J. H. F. Kohlbrugge, of Utrecht, has for several years been carrying out investigations on the influence of tropical climate on Europeans, and has arrived at some interesting conclusions. These were published recently in German. The original paper has now been translated into English by Mr. J. H. Koeppera, and published in the "*Eugenics Review*." He states that although Europeans become pale in the colonies, this is not necessarily due to ill-health.

"The main reasons for paleness in hot climates," he says, "are the following: The skin becomes saturated with perspiration and the corneous layer of the epidermis softens and thickens. The same phenomenon can be observed at home in summer, when, owing to swollen fingers rings often cause discomfort. The second reason is that in the tropics the atmosphere is charged with moisture, which prevents perspiration from evaporating, and so the epidermis grows opaque. The fact that moisture encourages the formation of adipose tissue may be another reason. People living in a dry climate are generally lean and gaunt; the inhabitants of the desert and North America are examples. The Javanese, on the other hand, owing to their very moist climate, are not stout, but the beautifully rounded contours of their body prove the presence of a well-developed, fatty layer under their skin. Most Dutchmen become plump in their colonies. In the dry air of the hills Europeans regain their healthy rosy appearance, the old corneous layer sloughing off. This holds good for natives also, although the natural darkness of the skin hides the pallor which originates in any climate which resembles a hothouse."

If a white man be a wise man he can acclimatize himself to tropical conditions perfectly well; but the chief conclusion that Dr. Kohlbrugge has drawn from his observations is that until now no white race has been able to survive in the tropics unless race mixture has taken place. He has only been able to find one family which has survived four generations while remaining racially pure. This was in the Dutch East Indies. The present generation consists of four brothers, all married, but childless. Thus it will be impossible for Europeans to take the place of the native in the tropics. We cannot do without him as a laborer now, if his country is to be made prosperous, nor can he do without the white man, and this for a peculiar reason.

This is best expressed in Dr. Kohl-

brugge's own words. He says: "The experience that the nervous system of Europeans suffers in the tropics has been corroborated by science. The first symptoms are chiefly insomnia and an increased irritability. It has been said that this is due to overwork and restlessness observable in all new colonies where individual effort is so much more essential than at home, but this opinion is contradicted by the fact that the nervous system of individuals who do not participate in the accumulation of wealth and influence also suffers. Letters, reports, etc., show the highly strung state of the nerves; and the tears ready to appear at any sad opportunity are but a symptom of the protean malady of neurasthenia.

"The native in his natural state does not show this irritability, but if he is 'educated' to the same degree as ourselves, and if his intellectual life is as intense as our own he suffers as much if not considerably more. The inference is that a tropical climate induces a certain intellectual indolence, and that any work carried out with European energy very soon causes neurasthenia. This is why the best and most highly gifted intellectually are the first to succumb. Scientists and officials are mostly worn out at the age of 50. The colonies suffer, because the higher posts are naturally held by the older individuals, who already require rest, and are, therefore, opposed to innovations. Medical men, in observing children, are struck by their inability to suffer pain, and by their lack of control when subject to disagreeable sensations. The natives who have not been under the influence of our civilization can suffer the greatest physical pain without a murmur, but as soon as they are educated they dread trivial surgical operations even more than white children."

Of course, the native can be educated, and, as is well known, the Malays, for instance, are able to learn everything; they show great promise at the schools and universities, but, both in the Dutch and English Colonies, although examination results are excellent, the students lack what the author, or rather his translator, calls "character." He believes that this is to an enormous extent due to the low position occupied by women in the tropics. It is only when the future mothers are educated towards individualism that they will be able to give that training to their children which helps them to form "character," which will grow with their culture. "Even then," he says, "the question would remain unanswered whether the relaxing climate would not prevent further progress, whether the European, Japanese, and Chinese races will always have to be providers of energy for the real inhabitants of the tropics. We must wait. Centuries will have to pass before we can reply to these questions, and in the meantime we cannot do better than study our own history, in order to learn how slow our own progress has been and how often our progress has been suppressed."

"We shall then learn not to under-estimate the value of the native. The first maxim for any colonial policy ought to be: We cannot do without the native, because we must acknowledge that we cannot take his place.

"This is a sound policy, sound in our own interest. We also pay due regard to the future if we always remember that colonies are only then worth while having if we cultivate them in order to educate the natives for independence in the course of centuries. It is therefore the duty of the State, on the one hand, to prevent any selfish exploitation of the natives, and, on the other hand, to see that only the best types of humanity the Motherland can produce are sent out to act as educators. It is true this elite of the nation will perish if their offspring seek their field of work, as they often do, in the Colonies. In that case the possession of Colonies acts like bleeding, and the lack of energy which the Netherlands have shown during the last few centuries must be attributed to such bleeding, the motherland being too small for colonies of such large dimensions."

Flat Foot.

A specialist, writing in a recent number of the *London Hospital Gazette*, in reference to "flat foot," points out that this painful condition is "so common because people do not know how simple it is to prevent, and solely from ignorance persist in standing in bad positions." Among other useful exercises advised by this surgeon for the prevention and remedying of flat foot is one which appears especially applicable

to those numerous cases in which the arch of the foot has given away from the strain of prolonged standing — a state of things frequently found amongst factory hands, shop assistants, waitresses, hospital nurses, and others who have to be on their feet for many hours daily. This exercise consists in standing up and raising the heels from the ground a number of times; it is commonly known as a "tip-toe exercise," and should be carried out slowly and regularly each morning on rising, before boots or shoes have been put on. The weight of the body should be lifted an increasing number of times, up to 100, as the feet get stronger.

A Weak Spot in School Inspection.

Gradually we are realizing the value of medical inspection in schools, and also the work of the school nurse. Specific cases, says *The Sanitary Record*, can be pointed to where great improvements have taken place in children through parents acting upon the advice they received. With bad teeth extracted, defective vision corrected, and throat troubles removed, the children set about their work in a better spirit, and the task of the teacher is considerably lightened. But there is room for still further improvement, and managers and teachers are realizing that something more than exclusion will have to be done in the case of infectious disease and "dirty heads." The other day a case in point was brought under our notice by a master. A boy was excluded because of fever in the family and a suspicion of he himself having contracted the disease. Yet that evening he was at one time in the street playing with other children, and at another in a shop handing food about. In a girl's school several scholars were sent home by the nurse because of dirty heads. They were to be away at least a week; yet on the following Sunday they were in the Sunday schools mixing with the other children. We have made inquiries, and these cases are not exceptional. It must be obvious to all that exclusion in this way is worse than useless. Parents must not only be told to cleanse their children; they must be warned against letting them mix with others until this has been done. A system of notification to the Sunday schools should also be established, and superintendents should refuse to admit until the doctor or nurse certify that all is well. The same policy must be adopted in the case of measles or fever in the house. Isolation, to be effective, must be rigid in its character; unless it is so, it is almost worse than useless.

Public Sanitation and its Revenues.

In a recent issue of *American Medicine*, appeared the following editorial:

"The unearned increment does not seem to have the slightest relation to medical matters, but as it is a subject of intense interest to publicists, sanitarians must learn the arguments now being worked out to justify society in taking what is said to belong to it and not to the individual. It has always been accepted as an axiom that no rapidly growing community can possibly tax itself sufficiently to provide those sanitary necessities which cities of slower growth obtain only after decades of effort. It is now claimed that increased real estate values really belong to the people who created them and not to the man who was lucky enough to own the property and who did absolutely nothing to add to those values. It is therefore said that the unearned increments of valuation should yearly be taken to construct water and sewer systems, to pave streets, and to use in removing wastes and combatting disease. The idea is so revolutionary and borders so closely on the propositions of certain radical socialists, that there has been a great outcry against it, particularly from the English bankers who represent the people possessing this unearned wealth. Nevertheless the proposition is being seriously discussed by statesmen and has been taken up in America by conservative men who cannot possibly be accused of ill considered radicalism. The subject is thus brought into the sphere of practical sanitation and the medical profession must study the arguments, pro and con, to determine whether they are not justified in joining in the movement to put an end to preventable disease by methods never tried because money was never available.

"The ownership of increased valuation is the question in dispute. It is now openly claimed that if New York City should tax itself fifty millions to build subways which would add fifty millions to the property value of the regions served, the increase

belongs to the community, who can take it ethically by special taxation. A few noblemen, whose ancestors happened to own a part of London, are now drawing millions in yearly rentals from the very people who made the land valuable, and the Government has announced the policy of partial confiscation to use in preserving the health and lives of these people. The men whose ownership has never before been questioned are saying that this is a revolution, and the statesmen are calmly replying that it is only one of the long series of revolutions which the progress of civilization has forced upon the nation peacefully or forcefully, and are proceeding with the plans. Owners of New York are squandering millions in Europe, and owners of London, millions in all parts of the world, while in each city disease and death are present for the want of just such money for sanitation. These are the facts which are directing the serious attention of statesmen to the practical problem of shaping legislation which will enable them to use this property value in defence of the people who created it. Public health is bound to be enhanced if these ideas are spread to a practical application, and the medical profession is more vitally interested than any other.

"The congestion of population in the last few decades has caused enormous changes in medical practice, and there is no reason to doubt that the ideas of a few dreamers are bound to make still further revolutions.

"The tremendous modern concentration of populations is responsible for those remarkable unearned increases of wealth, and it is not at all unlikely that the proposed new taxation, if it is ever levied, will be used to pay physicians for curing the diseases the sanitarians fail to prevent. It all depends upon whether or not it is decided that society owns what it creates."

Commenting on the above, Grace Isabel Colbron, book and magazine reviewer in "*The* (Chicago) *Public*," says:

"The sound ethical and fiscal common sense shown in that editorial makes one wonder if the writer is quite ignorant of the genesis and development of the proposed system of taxation. Probably it is needless to point out to him that 'radical socialists' are not responsible for it, and that it is not the idea 'of a few dreamers' alone. But it is worth while to emphasize the justice of his view, that for the medical profession in particular this scheme of taxation is vitally important. Not merely in furnishing the means to enable the physicians of a great city to cope more successfully with disease and death among a crowded population, but to do away with this very crowding, with the greater depths of poverty which breed disease in all great centres.

"It will not be so necessary to furnish money for fighting disease under a just system of taxation. For an economic system which gives more equally of opportunity to every one has not place for conditions which above all are now the chief reasons for preventable disease and death. It must indeed be discouraging to a band of men who give all their powers, and even their very lives, as do our physicians in the effort to stem the tide of disease, and then to see it daily and hourly grow afresh in our tenement districts. Like the dwellers in the slums, our brave doctors themselves are often the actual victims of wrong conditions, and many a life the country can ill spare has been sacrificed, among the medical profession, to an economic system which permits the few to take what is earned by the many and should be used for the benefit of the many.

"The medical profession, first of all, are interested in just taxation, and if the physicians of our country could see this and join the ranks of those who are fighting openly for economic justice, they would prove of inestimable assistance. Many of them are now spending their lives and their strength in a splendid effort to stamp out the White Plague, a splendid fight indeed, but one sadly futile, for tuberculosis is not to be eradicated while slums exist, while hundreds of thousands of men, women and children live and work amid unsanitary conditions, ill-nourished, ill-clothed. And such conditions must exist while there exists the blatant economic injustice that puts a double burden on the earning power of the individual, to pour into the pockets of a few riches that the thrift of all has produced."

Dr. de Szendeffy's "Consumption Cure."

A certain amount of mystery appears to surround a new remedy for consump-

tion which was brought before the medical profession in Paris recently. In the first place, the compound used — administered by injections—is extremely complex, and as a therapeutic agent is regarded with some scepticism by not a few phyicians. Its advocates, including Dr. de Szendeffy, of Buda-Pesth, who first introduced the remedy, described it as a radio-active mixture containing peptonized iodine and menthol. Peptonate of iodine is quite unfamiliar to medical men in this country, although it is understood to have been used in France for some time, as being a form of iodine which is very readily absorbed. Then, again, the supporters of this *radium-menthol-iodine cure* apparently consider that the bacillus tuberculosis discovered by Koch is, after all, not the essential microbe of consumption; this view is, of course, directly opposed to modern medical teaching, and is almost sufficient of itself to bring the new method into disfavor.

A Serum Snuff for Hay Fever.

A correspondent writes that he believes hay fever, which for more than three hundred and fifty years has defied all attempts of the medical profession to perfect a cure, has finally succumbed to the march of science. A new cure, a *hay fever serum*, roughly similar in its action and mode of preparation to the well known diphtheria serum, is now ready for use.

The history of the new preparation, which gave excellent results last year in Germany, was given him by a prominent West End, London, England, physician, who is an acknowledged authority on serum-therapy:

"Not long ago Dr. Dunbar, a German scientist, discovered that hay fever was the result of an irritation of the mucous membrane of the nose, due to the action of the pollen grains of certain grasses floating in the air. Dr. Dunbar also succeeded in isolating from these pollen grains a poisonous substance which is the actual cause of the unpleasant symptoms of hay fever.

"Horses were then used in the preparation of a serum from this pollen poison in exactly the same way as diphtheria serum is obtained from the diphtheria poison. A small dose of the irritant is injected into the tissues of a perfectly healthy horse. He is a trifle upset by the small dose, but speedily recovers. A larger dose is given. Again he is slightly upset, but immediately recovers. The process is continued until even a maximum dose of the pollen poison has no effect on him. The curative serum is then prepared by drawing off a certain amount of blood from one of the animal's veins, separating out the blood cells, and drying the remaining fluid part.

"Treatment of the hay fever patient consists in sprinkling a few grains of this dried serum on to the nasal mucous membrane with a camel's hair brush or dropping it on the inner surface of the lower eyelid.

"Different people, of course, react differently to the serum, but in most cases the dry dust must be applied several times a day for a month or six weeks to give protection throughout the entire summer."

Sewage Purification by Carbonized Sludge.

Mr. Frederick Jagger, an English engineer residing in Leeds, has patented a system of sewage purification which he claims to be the only *system that produces valuable manure and no sludge*.

The mechanical portion of the system is explained by the patentee as follows: The sewage on entering the works passes through an iron screen that deprives the sewage of all the grosser solids. The screen is kept clean by scrapers automatically worked by a water-wheel and chains. These grosser solids are thus deposited on a perforated platform to drain. The sewage is then passed through screens or cages filled with 1-inch riddlings of carbon; it is then passed through another screen containing ¾-inch riddlings of carbon, and thence through another screen containing ½-inch riddlings of carbon. These screens replace the present generally adopted system of settling tanks, etc., and these automatic screenings are raised and placed in the carbonizer, fresh screens taking their place automatically. The carbonizer is specially constructed of iron, with a grate at the bottom and sides, and with doors to regulate the draught. There are also lids on hinges on the top to allow the men to put the screenings into the carbonizer. It is also provided with a chimney to carry away any obnoxious fumes. It requires no

fuel, as it is self-slow burning. The effluent from the screens, which is half purified, is then allowed to flow on to the surface of the filters. They are constructed generally 100 superficial square yards, and 3 feet deep, the filtering material being filled in as follows: 6 inches of clinker at bottom, then 6 inches of 1-inch riddlings of carbon, 6 inches of ¾-inch riddlings of carbon, 6 inches of ½-inch, 6 inches of ¼-inch, and finally the powder on top. As the effluent passes on to the surface of the filter the top layer of carbon absorbs all the impurities from the sewage, and the purified water percolates through the remainder of the filter through an effluent pipe into the inspection chamber.

As the filters become choked, and the water rises on the surface of the filters, the water lifts floats. This actuates a lever that closes the channel which carries the sewage on to the filter, and opens another, and allows the sewage to pass on to another filter with fresh carbon. When the choked filter has drained in a few hours the top layer is dry; it is scraped off and another fresh layer put on. This constitutes a fresh filter. The filter runs from a week to a month and longer, according to the density of the sewage. The top layer that is scraped off, being carbon, contains all the manurial properties in the sewage, making it the most valuable manure that can be obtained. The filters are, it is said, capable of dealing with at least 2,300,000 gallons per day. The patentee claims that the system is complete, as the sludge produces almost sufficient carbon to purify the sewage; that it is economical, as the top layer of filter produces valuable manure, the sale of which helps to pay the cost of workin, and there are no expensive chemicals to buy, no expensive sludge tanks and presses, and no scientific labor to employ; that it is simple, as any unskilled laborer could work the plant; and that the plant can be extended to deal with any quantity of sewage.

Standardization of Digitalis.

Standardization of Digitalis has been receiving special attention at the hands of Professor Hale, in *Bulletin 74 of the Hygienic Laboratory of Public Health and Marine-Hospital Service, Washington*. The author regards the view that the leaves of the second year's growth are more potent than those of the first year, as founded merely upon tradition, and his experiments show that the first year leaves are from 25 to 40 per cent. more active than the best second year leaves procurable. He similarly disposes of the idea that the leaves of wild growing plants are more potent than those of cultivated plants. Nevertheless, some of the former are more potent than the latter, but cultivation *per se* has nothing to do with the fact. As for the influence of heat and moisture, he finds that leaves dried in a vacuum or preparations made by macerating the leaves with cold water have no particular advantages. Fluid extracts, he says, are never as strong, relatively, as the tinctures, by reason of incomplete extraction of the drug, and he condemns the preparation of tinctures from such extracts. Weak alcohol (35 per cent.) is as efficient as stronger alcohol for extracting the leaves, but the more strongly alcoholic tinctures are better in that they contain less inert matter, and retain their potency much better. A comparison is drawn between extracts made by the official process and proprietary preparations, unfavorable to the latter in that they deteriorated to a much greater degree in the same period, the figures for the former being 4 to 8 per cent., those for the latter as high as 33.3 per cent., loss of activity. Further dealing with proprietary preparations, tablet triturates from different manufacturers were found to vary in strength by as much as 360 per cent., while hypodermic tablets of digitalin varied as much as 230 per cent. It is urged that makers of special preparations should submit them to much more rigorous tests than is done at present, and that physicians should use them as seldom as possible unless assured, by a system of dating, of their very recent preparation.

Open Mail

To the Editor of The Public Health Journal, State Medicine and Sanitary Review:

Let Us Help.

Sir:—Your recent suggestion that the medical profession should open the eyes of the public to the evils of quackery through the creation of bureaus of information and in other ways is a good one. The only wonder is that self-interest as well as concern for the public health has not shown the need of it long before this. The quacks have flooded the country with literature. The almanacs of the patent medicine men, with their descriptions of wonderful cures, are to be found everywhere. The only detailed exposures of the falsity of the claims made for these cure-alls are to be found in our medical journals, which laymen seldom see.

One great point will be gained when the bold claims of a sure cure shall have been wiped off the labels of patent medicine bottles and the labels contain no more than a bald statement of the ingredients That can be done through legislation.

The purging of the labels would not put an end to the game of false pretences and the appeals to popular credulity and ignorance. Almanacs would vaunt the virtues of valueless preparations. Handbills urging the purchase of this or that "certain remedy" for incurable diseases would be widely distributed. The members of our medical profession should do more than they have done to educate the public and weaken the effect of that deceitful literature. They might take up one quack preparation after another, tell what each is made up of, and explain why it could not do good and might do harm.

A. B.

The Case of the Egg.

Sir:—It is not how fresh, but how good, in the case of eggs, say the egg packers. As a general rule freshness is considered a desirable quality in food products. This rule, they say, is not universal, however, as, while the consumer prefers fresh fish, fresh fruit, eggs and other articles, he wants his wine and cheese to be aged. The term "fresh" has become synonymous with the idea of the desirable quality in eggs for the reason that eggs spoil very readily. But, commission men say, the actual age of an egg is only one of many factors that affect its quality.

An egg that has lain in a wheat shock for 48 hours in a warm July rain probably would be as unfit for human consumption as one that had lain there for a month, while an egg properly cared for in cold storage for eight or nine months would be as fresh as the day it was packed.

Most of the trouble with eggs, the packers say, is with the farmer who gathers them and markets them. For this reason I suggest that the war against bad eggs must be carried into the farming districts and must be a campaign of education among the farmers' wives, who usually have charge of the hens. In fact, in some places this is already being done.

Formerly it was customary for the farmer's wife to gather eggs whenever she had time. They would then either be saved up in a pail lowered into a well for storage until she had enough to take to the country store, or perhaps they would be kept in a basket of oats or bran in the heated country kitchen. Then they would be disposed of to the country storekeeper, who would barter them for merchandise, and incidentally would stack them up in his store until he had a load to take to market. When these eggs finally reached the city they had been subjected to many changes of temperature, had been shaken and roughly handled; some had lain in the sun and had embryo chicks in them, and all were in poor condition for packing.

Eggs are among the great trade drawers for the country storekeeper. The village merchant who pays the highest price for eggs gets the biggest trade, and inasmuch as all eggs are bartered for merchandise, the larger part of which is dry goods and notions, a country merchant cannot be very particular about candling eggs brought to him. Instead he is forced to fix a price that would protect him after the bad eggs were thrown out. He, in turn, sends all

of his eggs, without candling, to the commission houses, with the result that great numbers of eggs unfit for packing are placed in cold storage, while again others not fit for human consumption have been sold to bakers and confectioners for use in such combinations with other products as would disguise their taste and odor.

Many commission men have departed from this method this year. Country storekeepers have been advised to carefully candle their eggs, and to keep them in a cool, dry place where they would not be subjected to changes in temperature. Commission houses have emphasized this advice by paying a little more for eggs which have been cared for in this way, and the country storekeeper in turn is paying a trifle more for eggs properly gathered and cared for by the farmers' wives.

Eggs are hard to grade. This is because each egg must be considered individually, and there are many classes or qualifications. First of these is cleanliness. Clean eggs bring a much better price than dirty ones and large eggs bring a better price than small ones. Then there also is a preference in the color of eggs. Clear white eggs are said to be of a poorer quality than those slightly browned.

As it is impossible to examine the actual substance of an egg without destroying it, the art of egg judging can hardly be appreciated by one unfamiliar with the methods of commission houses. In the early spring when eggs uniformly are in good condition, some commission houses do not submit them to the "candling" process, but they are judged by experts, who from their very "feel" can pick out those unfit for packing. Others, however, use the "candling" process, as do many farmers who have learned the simple process.

As a matter of fact, any kind of a light may be used, but an ordinary electric bulb seems to be the favorite. It may be enclosed in a box or tin cylinder which has holes in it somewhat smaller than a half dollar, through which the light is emitted when the room is darkened.

The egg candler works with both hands, holding each egg to the light, large end upward. He gives the egg a quick turn, in order to view all sides of the egg and cause the entire contents to whirl.

This is the man who selects the eggs for storage. He can tell the actual condition of an egg to a degree a novice can hardly understand. He knows what eggs will keep through storage, and he also can tell just how soon another egg will spoil. On his judgment depends the condition of the egg market next fall and winter.

Few eggs are thrown away. Those which are specked and cracked are sold to bakeries, restaurants and hotels. Eggs of questionable quality are taken by low class restaurants. Eggs of this nature, when cooked with other foods, may have their flavor and appearance so disguised that they may be safely used, while if served alone they would be very repulsive. Every effort has been made by the health department of some cities to prevent the use of such eggs, but regulations covering them have been found difficult of enforcement. The sanitary regulation of restaurants and hotels, with the scoring system do much along this line. Careful watch for good eggs and vigilance for bad ones should be kept by the inspectors, and the condition and quality of eggs is an important point in the scoring.

K. A. M.

Meetings and Reports

DOMESTIC

Canadian Public Health Association Convention Programme.

Programme of the First Annual Convention of the Canadian Public Health Association, to be held in Montreal, 21st-23rd November next:

Tuesday, November 21st—

10 a.m. — General business meeting, including the adoption of the constitution.

12 noon — Meeting of the Executive and other committees.

2.30 p.m. — General meeting, at which papers of general interest will be read and discussed.

8.30 p.m. — Address of welcome. President's Address. Reception.

Wednesday, November 22nd—

10 a.m. — Meetings of sections·

Section I. Medical health officers. Convenor, Dr. Louis Laberge, Montreal.

Section II. Laboratory workers. Convenor, Dr. J. A. Amyot, Toronto.

Section III. Sanitary engineers and architects. Convenor, T. Aird Murray, C.E., Toronto.

Section IV. Social workers. Convenor, Dr. Grace Ritchie-England, Montreal.

2.30 p.m. — General meeting, at which the programme will consist of a symposium on Housing and Town Planning.

7.30 — Association dinner.

Thusday, November 23rd—

10 a.m. — General meeting, at which the programme will consist of a symposium on Sewage Installations.

12 noon — General business meeting, including election of officers and council.

2.30 p.m. — Excursion to local points of hygienic interest.

Evening — Departure.

A detailed programme will be published in the November issue of *The Journal*. Members desiring to contribute papers are requested to communicate with, and to forward an outline of their papers, to the General Secretary before the 1st of November.

Members intending to be present at the Convention are requested to kindly send their names to the Secretary of the Committee on Local Arrangements, F. C. Douglas, Esq., M.D., D.P.H., 51 Park Avenue, Montreal, to whom all enquiries should be addressed.

Members interested in the work of the special sections or wishing to contribute papers at the sectional meetings are requested to communicate with the various convenors.

The First D. P. H. from Toronto.

Dr. Hibbert Winslow Hill, Director of the Division of Epidemiology of the Minnesota State Board of Health, received the Diploma of Public Health (by examination), of the University of Toronto at the recent commencement, Friday, June 9th, 1911. Dr. Hill graduated from Toronto University in 1893, with honors and a post graduate scholarship, receiving the degree of M.B. In 1899 he received the M.D. degree, together with the Starr gold medal, awarded for a thesis on "Relation of Bacteriology to Public Health" The diploma of Public Health just granted is the first given by the University of Toronto, although the course has been open and the degree available for several years.

Maritime Medical Association.

The twentieth annual meeting of the Maritime Medical Association was held in the Nova Scotia Technical College at Halifax on July 5th and 6th. The attendance was large and the meeting was one of the most successful ever held.

On the morning of July 5th, his Worship, the Mayor of Halifax, gave the address of welcome, and papers by Drs. M. Chisholm, D. A. Campbell and A. I. Mader on "Polycystic Kidney" and "Infantile Paralysis" were read and discussed.

In the afternoon, the President, Dr. E. A. Kirkpatrick, of Halifax, gave his address. The Address in Medicine was made

by Dr. C. F. Martin, of Montreal, while Dr. M. G. Burris, of Nova Scotia Hospital, read a paper on "Pseudo-Muscular Hypertrophy."

In the evening the Address in Surgery was presented by Dr. S. J. Mixter, of Boston; Dr. MacCausland, of Boston, reading a paper on "Tuberculosis of the Bones and Joints, with Special Reference to Treatment"; Dr. J. A. Sponagle, of Middleton, N.S., read a paper on "An Unusual Case of Hip-Joint Disease," and Dr. McKay, of Halifax, on "Spinal Analgesia."

The morning of the 6th was devoted to the report of the nominating committee, election of officers, unfinished and new business and papers by Dr. Arthur Birt, of Halifax; Dr. A. B. Atherton, of Fredericton; Dr. P. C. Woodworth, of Wolfville; Dr. E. D. Farrell, of Halifax, and Dr. D. T. C. Watson, of Halifax; the evening being devoted to the consideration of papers presented by Dr. A. F. Miller, of Kentville; Dr. Jas. Ross, of Halifax; Dr. G. E. DeWitt, of Wolfville, and Dr. A. P. Reid, of Middleton, the Provincial Health Officer. Dr. Reid's paper discussed the "Sanatorial Treatment of Tuberculosis," and appeared in our July number.

Winnipeg and Rats.

That Winnipeg is threatened with a serious plague of rats is the inference to be drawn from a report which has reached us from the Health Department, which shows that an alarming number of the rodents are making trouble in several of the dairies to the west of the city and just outside the city limits. The report states that the rats are not only already numerous, but are breeding and multiplying at a most alarming rate. One dairyman recently found a nest under his dairy barn which contained 14 little ratlets that blinked in the bright sun and wagged smooth little rat tails before they were the victims of summary execution. The same dairyman states that rats are swarming under the floors of his barn where he can hardly get at them.

In another stable, built on a concrete foundation, the rodents have made a run away in one of the walls by gnawing through every one of the 2 x 4 joists in the wall, and they scamper about as if they had lived in Manitoba for years, occasionally coming out into the stable for their provender.

This particular case is pointed to as a strong argument for concrete floors in all dairy barns.

The invasion of rats into Manitoba from the States to the south has progressed steadily for some years past, the rodents appearing further north each year, and always in increasing numbers. Last year a few stray specimens were killed in Winnipeg, some of them in Elmwood. This latest report indicates that they are gaining a foothold close to the city and that the situation is growing genuinely serious. No action has yet been taken by the Health Department, but it is likely that the whole question of protecting the city from rats will come before the Health Committee at its next session.

Toronto's Health Officer and the Slums

Dr. Charles J. C. O. Hastings, Medical Health Officer of Toronto, recently handed in his report to Ald. Rowland, Chairman of the City Board of Health. Dr. Hastings pointed out that first, a good housing by-law with provision for its adequate enforcement was needed; second (see article on the International Housing Conference and British Suburban Cities, under Meetings and Reports), garden cities with rapid transportation facilities at single fare were needed, and, third, proper city planning. The report was based upon the results of visits made by Dr. Hastings' inspectors to 4,693 houses in the city, and in part states:

"From an economic standpoint, is it reasonable to think that the mechanic and the laboring classes can be housed to as good advantage on land of city value as on land in the suburbs which is assessed at from $1,000 to $2,000 per acre?"

Dr. Hastings, in advocating the expropriation of the area surrounding the city for about five miles, gives the following comparative table:

Toronto	17,920 acres.
Buffalo	26,880 acres.
Cincinnati	27,840 acres.
Detroit	23,040 acres.
Minneapolis	34,080 acres.
Indianapolis	19,840 acres.

"The following conditions, peculiar to great cities, are found to be present to a lamentable extent," says Dr. Hastings. "High rents are being collected for small houses, dark rooms, tenement houses, houses unfit for sanitation; inadequate water supply; impaired and filthy yards and lanes; sanitary conveniences, which, by their position, or for various other reasons, have become a public nuisance, a menace to public health, a danger to public morals, and an offence against public decency."

In speaking of the visits made to slum homes by his inspectors, Dr. Hastings says:

"Some houses were so inaccessible that they were at first missed, even by experienced inspectors. One house could be reached only by a curious tunnel-like passage from the street, down a dark and precipitous stairway, and up again into a back yard. Two houses were found built over stables with no evidence of any drainage."

He finds that the district lying between Yonge, College and Queen streets and University Avenue is the most densely populated part of Toronto. Of the 2,051 families visited in this section, 1,275 families lived in four or more rooms, 348 families in three rooms, 227 families in two rooms, 139 families in one room, 61 families in basements, and 1 family in a cellar; 108 of these houses were pronounced to be unfit for human habitation.

The report states that overcrowded, unsanitary lodging houses are increasing in Toronto. From 10 to 30 foreign men are crowded into a small house. Each pays from 75 cents to $1.25 per week for lodging and washing, while he earns from $1.75 to $3.50 per day.

"Their ways are not ours," says Dr. Hastings. "Every effort must be made to familiarize our new citizens with our sanitary standards."

He reports that there are 92 tenement houses in Toronto; 447 people in the city are living in basements, and 22 in cellars. One dwelling near Niagara Street had four inches of water in the cellar; another, in the centre of the city, which rented at $20 per month, had four feet. In the cellars and back kitchens of many houses, hens, ducks, and dogs are kept. In one basement 12 people live. Some of the houses do not even keep out the cold and wet. In one the bedroom floor had a couple of inches or more of water on it. Two boards were laid down and the man and his wife got into bed without wetting their feet by walking on these boards. In one house of five rooms, five families lived. They kept two sewing machines, and conducted a tailor shop.

Altogether, the Medical Health Officer's inspectors condemned 390 houses: 77 in the Eastern Avenue district, 108 in the central district, 9 in the Niagara Street district, and 197 in other districts. In these condemned houses 2,133 people are now living, amid unsanitary conditions. Forty-eight houses with dark rooms were discovered. In one of these dark rooms seven people slept.

There are 1,348 dwellings in Toronto without drains; 619 of these are near the City Hall. In most of these the waste and slop water is thrown into the yard. 559 families have no water in their houses, although the rent is high enough to provide for a good supply. A row of ten houses was discovered where there was only one outside water tap for the whole ten, yet the landlord receives $960 annually in rent.

Two hundred and forty-six "rears," or houses built on back lanes, were discovered. Some of these, being next another house or a stable, have no access to fresh air.

Dr. Hastings states that Toronto must solve the following problems connected with her slums: the lodging house evil, the tenement house, dark rooms, back-to-back houses, basement and cellar dwellings, unsanitary privy pits, lack of drainage, inadequate water supply, overcrowding, and exorbitant rents.

"Inasmuch as there is a legal rate of interest permitted to be collected, why should anyone be permitted to charge rent which is out of all proportion to the returns?" asks Dr. Hastings, "simply because he is dealing with a foreigner who is not familiar with conditions, and who is entirely at his mercy."

From the reports of his inspectors, Dr. Hastings estimates that 10,000,000 gallons of water are wasted daily simply because penurious landlords will not provide proper plumbing, which, in addition to inadequate intake, pumping and storage facilities, may have something to do with the water famine which occurs periodically in his city.

INTERNATIONAL

The International Housing Conference and British Suburban Cities.

Houses for Old People at Hampstead, England.

Community Shops in Finchley Road, Hampstead.

Cottage of Hampstead Within Twenty Minutes of London.

Beck Gardens and Houses at Bownville.

Ridge Road, Letchworth.

At the recent International Housing Conference in Vienna it was demonstrated that suburban cities on which ten houses per acre are built, will pay just as large dividends to the owners as other plots on which twenty houses, of similar size, per acre are built. This results from combination of various kinds. England, it was pointed out, has shown how it can be done in forty or fifty instances. The garden cities, garden villages, and garden suburbs there are solving the housing question. It has been found to be just as cheap for a man to live in his own house within twenty minutes of the heart of London as to crowd with his family into a tenement.

Several papers brought out the fact that England began some seven or eight years ago to develop the garden city idea. And there are now three kinds of settlements—the garden city, the garden village, and the garden suburb. The city, as the name implies, is built on a rather large scale. It is sufficient to itself. There are factories and stores, and everything necessary for the life of the community.

The village is the same sort of settlement on a smaller scale. Sometimes, indeed usually, it is partly independent and partly dependent for employment on some large city near by. Finally, the suburb is merely a settlement on the outskirts of some city whence people commute to work.

The fundamental idea is the same, however. In every case the settlement is co-operative. Rents are so arranged that tenants pay no more, and most pay distinctly less for an entire house in the country than for an undesirable apartment in town. Bit by bit this scheme has been worked out, transportation has been provided, and the railways and the Government officials have co-operated in such a fashion that manufacturers have found it to their advantage to move out into the country.

Within 20 minutes' ride of London it is possible now for a working man to have a house and garden at the same price he paid for an inferior tenement. Rents at Hampstead Garden suburb run from $2 to $2.50 a week for a house with four or five rooms, a kitchen and a garden. This means that the working man pays not more than a quarter of his income for rent. In New York the proportion of income paid for rent very greatly increases as the income diminishes, so that the poorest class pays as much as 50 per cent. of its entire earnings for a place to live.

Further off from London there are a number of other settlements, more or less suburban. Sometimes the tenants go into the city to work, sometimes they find employment in the factories which have found it to their advantage to move from the city, and what is true of London is true of Liverpool, Bristol, Birmingham, Manchester, and other large cities of England. Everywhere the movement is away from the slums back to what approximates to country life.

The charm of these settlements lies not only in their cheapness, but in the extreme beauty of their design. The property is owned in common by all the tenants, and there are architects who pass on all the buildings which may be proposed. The village is harmonious. No incongruities are permitted by the architect, and, indeed, the tenants have so keen a sense of pride in their property that they are perfectly willing to co-operate for the general beauty of the design.

By combining it has been found possible to make a great saving in various ways of building, in the laying of sewers, and in the grading of roads. Everything is done in co-operation and on a very economical basis. The idea in most settlements has been to make perfectly straight streets and to have regular little blocks of houses lining them. In these garden cities and suburbs there has been no attempt to lay out a settlement on these stern lines.

When a hill came in the way the road went quietly around its base. No trees were sacrificed to make the way straight. The trees were preserved and the road turned. The result has been a very charming irregularity which has never been allowed to develop into eccentricity and a great saving in the laying out of the village.

The Co-Partnership Tenants Housing Council is the body which spreads the propaganda of this movement. The Co-Operative Tenants, Ltd., is the central financial body. The moving spirits of the work have been some of them financiers, some philanthropists, and some of them really representative labor men. With the exception of one or two cases the garden city movement in England has been really democratic. Only very occasionally, as in the case of a village built around one great factory, has there been a disposition to "do things" for the tenants. The control of the village, or suburb, is ordinarily rested squarely in the people themselves, and everything is on a strictly business basis. The Co-Operative Tenants Housing Council found it a waste of time, however, to appeal to the working people before the scheme was well under way. They had no money to put into it and ordinarily were not interested until they saw what the results would be.

On the other hand, financiers found it a perfectly safe investment for their money as well as an interesting thing to do. So they first got the money and after that had never any difficulty in getting all the tenants they could accommodate.

None of the bugbears held up before people who planned such co-operative schemes have turned out to be really serious. The working men liked the country, found the atmosphere of the suburb, or the village, or the city quite as congenial socially as that of the tenements, and ran their own affairs in a perfectly well-ordered manner without any more bickering than occurs in the ordinary town council, and perhaps less. There is usually a central amusement hall and a good deal of social life.

But when the first garden city began its career there were a good many rather odd people who came to settle. Some wore mediæval garments and some went barefooted, and all had a new and infallible method of reforming the world. Tact was needed to handle the situation, and everything came right in the course of time.

Now the tenants are ordinary, everyday folk just like the rest of us. Nearly all of them had bad living quarters in the city. Some of larger means live in the settlement because they like it better than any other place. There is an attempt, and it has been quite successful, not to let the villages become class bound, not to have a settlement given over entirely to people of a certain social grade.

The financial organization is done in this fashion: The British Government is empowered to loan money at 3½ per cent. on all schemes that are for the public good. They will loan up to 66 2-3 per cent. of the value of the property. The co-partnership tenants get this loan, which is sufficient to start the work. Loan stock is issued bearing a fixed interest at the rate of 4 per cent., and ordinary shares with a higher rate of interest are also issued.

No tenant can be admitted to such a garden settlement unless he owns $250 worth of share stock. As the possession of so large a sum as this is not to be expected of poor people, it is made very easy for them. They pay a very small sum down and then the interest on their shares is credited to them until $250 has been paid into the treasury, after which they withdraw their annual interest in cash.

Two hundred and fifty dollars is the minimum value of stock a tenant may hold in a settlement. After the minimum has been paid in the tenant is encouraged to increase his holdings in the society until he has an amount of stock equal to the value of his house. Thus, though no tenant owns his house by itself, as it were, he owns that much property in the community, and, of course, he is entitled to live in the same house as long as he is a member of the settlement.

On the other hand, if he wishes to leave the community his house is at once taken over by the society. He has no fear of having his house unlet or of selling at a loss. He can retain his shares and draw his interest if he wishes it, provided the society does not exercise its power to pay him out at par when he leaves.

The central body has drawn up these plans very carefully, and they are the result of years of experience. They work out perfectly, and every new community that is started to-day finds its problems settled for it. There is no floundering around and experimenting and failing. Within three years after the organization of the Co-Partnership Tenants the holdings of the society were more than two and a half million dollars, and since then the number of societies has increased two or three times over.

Only one or two of the most beautiful settlements of this kind are not democratic; these are among the garden villages. There is only one that might really be called philanthropy, not business. That is Port Sunlight, a very beautiful place on the River Mersey, near Liverpool.

The manufacturer who built that has made it extremely beautiful. He has installed hospitals, schools, kindergartens, playgrounds, gymnasiums, libraries, recreation centres, everything that could be desired, and has built charming houses which he lets at a small rent. He does not get a money return from the money he has invested, but he says that he finds his advantage in the increased efficiency of his workmen.

There is another village not faw away, built also around a great factory. That is more democratic and pays something like 3½ per cent. on the owners' investment. There are several villages of this kind, but most of the settlements are run in a way that no person, however independent, need take exception to, even those which centre around a large factory.

These villages are interesting to show what can be done in the way of turning factories out of the cities into the country. The British Government encourages this sort of thing, and so do the railways. When a factory removes from the city the railway will run a siding up to its door, thus making the transportation cheaper; or, when that is not possible, the manufacturers will use one of the many canals which the Government has built to facilitate this return to the country. In fact, so many things are done to make it easy for the

manufacturers to work away from the city that they are every year turning to the country in large numbers.

The garden city, of which the settlement at Letchworth is an example, is the garden village plan in a very comprehensive and democratic way. The garden city centres around not one, but a score of factories. The community is quite complete in itself. Letchworth is the largest example of the scheme in England, and its success has been quite phenomenal.

Of course, there have to be transportation facilities to get to garden suburbs. London does pretty well in this way. There are working people's fares in the morning and evening hours, which are one-half what is charged in the middle of the day. A man can go from Hamstead suburb, for instance, to the heart of London for three cents.

All the settlements have co-operative stores. This is a scheme quite distinct from the garden idea, though always used in connection with them. The Rochdale co-operative stores are very widespread in England, and the society has established one in every garden settlement. So the tenants get back their rent in dividends and receive also a dividend from the grocery stores.

The Dresden International Exhibition and German State Insurance.

In Dresden there is now going on the world's exposition of hygiene and health, with kaiserliche patronage and the attendance of one knows not how many imperial councillors and geheimraths.

Not the least interesting exhibit at the show is the section illustrating the German system of state insurance. The walls of the building set aside for the purpose are hung with maps showing the frequency of accidents, disease and death in all parts of the empire. These are interspersed with photographs of new safety devices and protected machinery. And the corners are decorated with plaster figures of working men and women, all handsome types proudly proving that labor, in Germany at least, is no soul-wreaking curse, but the veriest blessing, to judge from the rounded cheeks and the smiles on the faces of the models.

Supplementing these are models of hospitals and sanitoria scattered over the empire, for the express use of working people. They are replete with medical baths, gymnasia, reading and recreation rooms. At the end of the year 1910 there were 60 of of these institutions, and in the year 1909 over 34,000 working people were treated in them, 20,000 of them for diseases of the lungs alone. And one tuberculosis hospital — that in Wasach, Wurtemberg — forms a special exhibit all to itself, probably the most imposing and important of its kind in all Germany.

The movement against alcoholism, still in its infancy in beer-drinking Germany, enjoys ample space all to itself. The national beverage is here treated to some hard knocks, and the advocates of "liquid bread" are left mighty few legs to stand upon. The visitor is informed that 29 per cent. of the imbecile children of Germany are in that unhappy state because of intemperance on the part of their parents. There are charts hanging up showing how the habitual use of alcohol lowers the working power of the body. It is shown that in Leipsic every 100 drinkers have 123 cases of illness every year, while the temperance advocates have only 49 per hundred. Statistics laboriously collected by Professor Demme show that in selected groups of 10 families of temperate habits, only 18 per cent. of the children die young or are abnormal and degenerate. In the anatomical department are vivid and gruesome models of alcohol-saturated livers, stomachs, kidneys and hearts, and on the walls are pictures of inebriates in the throes of delirium tremens. At the same time there is no teetotal fanaticism about these exhibits, no appeal to the feelings. It is nothing but the impartial inexorableness of the photographer and the statistician.

The exhibition is being widely visited, alike by the Germans and the strangers within their gates, and there is small doubt but that benefit commensurate with its extent and elaborateness will flow from this unique congress.

UNITED STATES

The First Recipient of D. P. H. at the University of Michigan.

The honorary degree of Doctor of Public Health was conferred upon Dr. William Augustus Evans, of Chicago, at the recent 67th annual commencement exercises of the University of Michigan. This is the first time this degree has been conferred at Michigan, and in honoring the Chicago physician, President Hutchins, of the university, said:

"The university, recognizing the inestimable value of preventive medicine to the people, has recently provided for a course of instruction leading to the degree of Doctor of Public Health. It is certainly fitting that the first recipient of this degree should be Dr. William A. Evans, of Chicago, a man who, for a number of years, has controlled the sanitation of the metropolis of the northwest, whose service in that regard has been conspicuous for its efficiency."

The courses leading to the degree of Master of Public Health and Doctor of Public Health have but recently been approved by the Board of Regents of the University of Michigan, and will be offered for the first time next fall. The only other universities in the United States offering these courses are Pennsylvania, Columbia, and Harvard. Some work in this course is demanded of all physicians practising in Great Britain, and Canada is falling rapidly into line.

At the University of Michigan candidates for either degree must first have the degree of Bachelor of Science or Bachelor of Arts, and the further degree of Doctor of Medicine. The course leading to the degree of Master of Public Health is of one year, covering work in advanced bacteriology and parasitology, practical hygiene, physical education, sanitary engineering, building, sanitation, hydraulic work, autopsy technique, special pathology of infectious diseases, social and vital statistics, sanitary legislation.

The moral character of applicants for these degrees must be shown to be above question. The examination in the courses before the degree is conferred is both theoretical and practical. The candidate for a degree must carry out a piece of original investigation of sufficient value, present a thesis on the same, and successfully defend this thesis.

The course leading to the degree of Doctor of Public Health is of two years, identical with the one described above, but the second year must be spent in research work and a second thesis prepared and defended.

Dr. William A. Evans, as Health Commissioner of Chicago, transformed the Department of Health from little more than a name to one of the most useful branches of the city government. In scope and size it was increased three times. In the number of men and equipment it was doubled. In the matter of efficiency it became 50 to 75 per cent. better.

Among the new lines which Dr. Evans inaugurated, the bureau of publicity and education probably stands foremost. He has always maintained that the chief work of the Health Department in its prevention of disease lies in the education of the people. The bureau published a weekly health story in popular style and distributed it throughout the city. A corps of lecturers was established by Dr. Evans, who invited the organizations of the city to avail themselves of the department's lecturers. He himself gave on an average one lecture a day throughout his term of office.

Dr. Evans also enlarged the scope of the weekly health bulletin, eliminating much of the dry technical and statistical matter and substituting for it advice on health topics of more service to the public. It was probably the foremost journal of its kind in the world, and has been widely copied. Another branch of the educational side of the department was the bulletin board service which he started. Weekly health bulletins were posted in many of the factories, department stores, and commercial houses in the city.

Probably the most discussed of his innovations in the department is his work on ventilation and impure air diseases, a subject formerly entirely neglected by the department. He showed that the impure air diseases, such as pneumonia, tubercu-

losis, and bronchitis, caused ten times the number of deaths as smallpox, diphtheria, and scarlet fever, diseases which had formerly taken up the greater part of the efforts of the department.

Dr. Evans took up the question of tuberculosis not only from the educational side, but from the milk and housing side. He was instrumental in the establishment of the new Chicago municipal tuberculosis sanitarium. The ordinance requiring the milk sold in Chicago to come from cows tested for tuberculosis or else to be pasteurized came only after a hard fight by Dr. Evans.

Dr. Evans was personally responsible for a crusade to take bakeries and restaurant kitchens out of basements. His idea was to furnish the employees better sanitary surroundings and the people a better quality of food. The bureau of food inspection was increased during the term of Dr. Evans from a body of six or seven men to a bureau of eighty men, the majority of whom are working in the field.

The system of examining school children, which was formerly one merely for contagious diseases, was changed by Dr. Evans so that the children were examined for all physical defects. He brought to the department a squad of sixty nurses to work among the school children. Among the other things which he established was a contagious disease hospital for the treatment of diphtheria patients. He also established the Lake Michigan Water Commission, to prevent the pollution of Lake Michigan.

There was more real organized effort to prevent infant mortality in Chicago during the term of Dr. Evans than ever before. He organized the infant welfare commission from various clubs throughout the city, which has been instrumental in bringing about the organizations of similar commissions and exhibitions in other, cities including Montreal. And one of his last acts was to influence the council to appropriate money for the establishment of a bureau of infant hygiene.

Exhibitions of the National Association for the Study and Prevention of Tuberculosis.

Exhibitions, showing in graphic form the prevention of consumption, have been shown in every State in the United States, except Nevada, Arizona, New Mexico, and Wyoming, and also in most of the Canadian Provinces, and in Mexico, Porto Rico, and Cuba, according to a bulletin issued by the United States National Association for the Study and Prevention of Tuberculosis. The bulletin also shows that 25 States and 16 cities have permanent and travelling exhibits besides the two operated by the National Association itself, the total number of such displays being over 200, including about 150 small school exhibits.

The first tuberculosis exhibit in America was shown by the Maryland Tuberculosis Commission in January, 1904. In 1906 there were four such exhibits. To-day practically all of the larger cities of the country have such displays, and in twenty-five States comprehensive campaigns have been carried on with them. These exhibits are visited annually by millions of people.

The American Tuberculosis Exhibition of the National Association is completing six years of continuous service, during which time it has been shown under three flags, in the United States, Mexico and Canada, and has been displayed in 21 States, including every Southern State east of the Mississippi, except West Virginia, Maryland and Delaware. The Western Tuberculosis Exhibit of the National Association, just closing its season in Butte, Montana, has been shown in Illinois, Kansas, Nebraska, Missouri, Arkansas, Oklahoma, Colorado, Utah, Idaho and Montana.

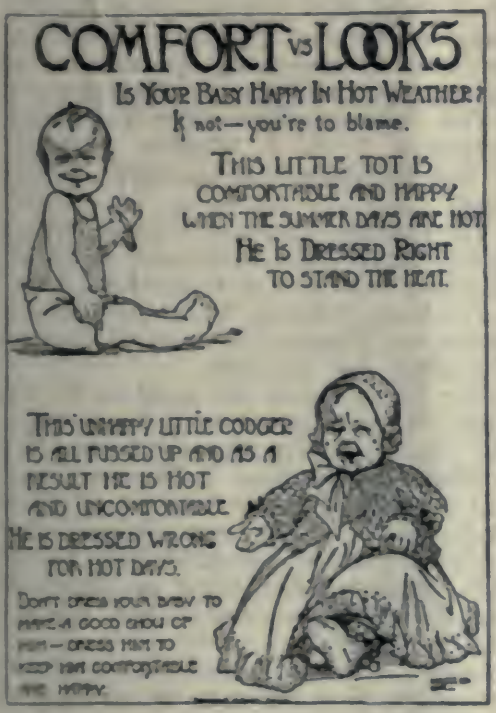
As a result of the general educational campaign through the various exhibitions on tuberculosis, millions of pieces of literature have been distributed; millions of people shown how to prevent consumption; and several States and cities have been roused to take legislative action against this disease.

Chicago and the Babies.

Dr. George B. Young, Health Commissioner, says the proper care of babies is one of his hobbies and that he and his department will give infants a good deal of attention from now on.

The problem of keeping the baby healthy and comfortable during the hot weather engrosses the attention of many mothers,

but the solution of the problem, according to Dr. Young, lies only in common sense clothing and perfect cleanliness, with a reasonable degree of caution in regard to what the child eats and drinks.


COMFORT VS LOOKS
IS YOUR BABY HAPPY IN HOT WEATHER?
If not—you're to blame.
THIS LITTLE TOT IS COMFORTABLE AND HAPPY WHEN THE SUMMER DAYS ARE HOT
HE IS DRESSED RIGHT TO STAND THE HEAT.
THIS UNHAPPY LITTLE CODGER IS ALL FUSSED UP AND AS A RESULT HE IS HOT AND UNCOMFORTABLE.
HE IS DRESSED WRONG FOR HOT DAYS.
DON'T DRESS YOUR BABY TO MAKE A GOOD SHOW OF HIM—DRESS HIM TO KEEP HIM COMFORTABLE AND HAPPY.

By means of pictures, such as the one on this page, illustrating the difference between the cool, comfortably clothed baby and the hot, stuffy, dressed-for-show infant, Dr. Young has made his point in regard to the proper care of the baby in summer.

The hot weather rules are as follows:

First — Dress the baby in a clean cotton diaper, a gauze shirt, and a light cotton slip. On extremely hot days the cotton slip may be dispensed with. If the baby is delicate, more clothes may be required. Abdominal bands should not be used unless ordered by a doctor. Pinning blankets should be discarded; baby should be allowed free action of its legs.

Second—Baby must have a tub bath every morning about the same hour, but never immediately after feeding. Regularity counts for much. If no bathtub is available use a common tub, but have it clean. The water should be a trifle (2 degrees Fahr.) warmer than the baby's body. Use a thermometer to ascertain the temperature. Babies will enjoy baths in the right kind of water. Use a good non-irritating soap. In hot weather you may add to the baby's comfort by also giving it a late afternoon sponge bath. If you permit your baby to crawl on the floor, keep the floors clean and wash the baby's hands after it has crawled.

Third—Baby requires lots of fresh air; the more it gets the better its chances of being a strong, healthy baby. Of all the pure things the baby must have there is none more important than pure air. In hot weather keep the baby out of doors as much as possible. Permit naps in the open air, in a shady place, removed from dust and protected from flies. You can rig up a good sleeping place with chairs, and over these hang mosquito netting. When the baby sleeps indoors see that the windows are opened at night as well as day. Never have the baby sleep in the same bed with an adult.

Fourth—There seems to be a woeful lack of appreciation of the fact that baby must have water to drink. Many times when a baby cries all it wants is a drink of water. To be safe, use water which has been boiled and cooled. Never put ice in the water; it must not be ice cold.

Keeping the baby comfortable, happy, and well in hot weather is not a difficult proposition, and it entails much less worry on the part of the mother than does the care of a baby which is cross, irritable and sickly through neglect of these considerations.

The United States National Education Association.

The forty-ninth convention of the United States Nationail Education Association in San Francisco was an event of unusual interest. It was in fact the deferred convention of 1906 for which every preparation had been completed by San Francisco when the destruction of the city made a meeting for that year impossible. At once an appeal was filed by California that the convention abandoned for that year should be held in the new San Francisco as soon as rebuilt. Therefore, the educational road last month led across the continent to the Golden West. The opening day of the conference was Saturday, July 8. The

next day was educational Sunday, and special sermons were preached in all of the city's churches. The real business of the meeting began on Monday, July 10, when at 3.30 in the afternoon the first general session was held in the Greek Theatre of the University of California. Among the interesting papers read, some of which have been handed to *The Public Health Journal* for later publication, were the following:

Progress in Public Education, Francis G. Blair, State superintendent of Public Instruction, Springfield, Ill.

The Health of School Children, Robert J. Ally, president University of Maine.

Physical Training in Public Schools, J. G. Collicott, Superintendent of Schools, Tamoca, Wash.

Playgrounds and Health, L. H. Weir, Field Secretary, Playground Association of America.

Laboratory Instruction in Hygiene and Public Health (with demonstration), William Freeman Snow, Secretary State Board of Health, Sacramento, Cald., and Ora Boring, Sacramento, Cal.

To What Extent Does Manual Arts Training Aid in Adjustment to Environment?, Clifford B. Connelley, Dean, School of Applied Industries, Carnegie Technical Schools.

The Public School Domestic Science Department as an Influence in the Community for Enforcing the Observance of Pure Food Laws, Civic Cleanliness, etc., Mattie P. Clark, Polytechnical High School, Oakland, Cal.

Health and Ventilation, Luther H. Gulick, Director of Department of Child Hygiene, Russell Sage Foundation.

Effects of Low Temperature and Open-Air Class Rooms upon Mental Alertness of Pupils, Frank L. Bruner, Assistant Director of Department of Child Study, Public Schools, Chicago.

How to Secure Good Ventilation in School Rooms, Luther H. Gulick, Director of Department of Child Hygiene, Russell Sage Foundation.

Sex Hygiene, Frances M. Greene, M.D., 5 Avon Street, Cambridge.

Report of Committee on Efficiency of Janitor Service in School Buildings, Helen C. Putnam, M.D., Chairman of Committee of American Academy of Medicine to Investigate the Teaching of Hygiene, Providence, R.I.

Bacteriologic Tests of Methods of Cleaning, Ernest Bryant Hoag, Laboratory of School Hygiene, University of California; W. D. Frost, M.D., Department of Bacteriology and Hygiene, University of Wisconsin; Miss V. Armstrong, Department of Bacteriology and Hygiene, Wisconsin.

The Scientific Basis for Ventilation Standards, C. E. A. Winslow, Professor of Biology, College of the City of New York.

The Sanitary Survey of Schools, Ernest Bryant Hoag, M.D., Laboratory of School Hygiene, University of California.

The Care of School Buildings, Miss Johanna von Wagner, Los Angeles Housing Committee, Los Angeles.

Our Short Course for Janitors, W. D. Frost, M.D., Department of Bacteriology and Hygiene, University of Wisconsin.

What Can Be Done to Prevent Blindness in Children Under School Age? Mark D. Stevenson, M.D., Akron, Ohio.

The Hygiene of Vision, F. Park Lewis, M.D., Chairman Committee on Conservation of Vision, American Medical Association, Buffalo, N.Y.

School Activities in Relation to Children's Eyes, J. A. Shawan, Superintendent of Schools, Columbus, Ohio.

Causes of Backwardness and Mental Deficiency in Children, and How to Prevent Them, H. H. Goddard, Director Laboratory of Research, New Jersey Training School for Feeble Minded Children.

What Constitutes a Sub-Normal Child, and to What Extent Can he be Trained? Vinnie C. Hicks, Special Psychologist, Public Schools, Oakland, Cal.

The Physiology and Psychology of the Deaf Child, Charles D. Lowry, District Superintendent of Schools, Chicago.

Forests, E. T. Allen, Forester and Secretary of the Western Forestry and Conservation Association, Portland, Ore.

Waterpower, Lands and Minerals, Geo. C. Pardee, former Governor of California.

National Vitality, William F. Snow, M. D., Secretary California State Board of Health.

The Teacher's Part in Conservation, Frederic Burk, President State Normal School, San Francisco.

Societies meeting with the United States

National Education Association were:

I. Federation of State Teachers' Associations.

II. The American School Peace League.

III. The School Garden Association of America.

IV. The Religious Education Association.

V. Educational Press of America.

An informal meeting of the Educational Press Association was held similar to the one at the Boston convention last summer.

THE EMPIRE AND THE WORLD ABROAD

Royal Sanitary Institute Congress.

This year's Congress of the Royal Sanitary Institute, which was held at Belfast from July 24th to 29th, had as its president Lord Dunleath, D.L., J.P. Members of and delegates to the congress were received in the City Hall by the Lord Mayor on Monday the 24th inst., and the afternoon of the same day witnessed the opening of the Health Exhibition in the Ulster Hall by his lordship, who, in company with the lady mayoress, later held a reception of the members. The inaugural address to the congress was delivered in the evening by Lord Dunleath. Subsequent days were occupied by meetings of the various sections. Excursions to numerous places of interest in Belfast and the immediate neighborhood were arranged, one of especial interest, in view of the recent report of the Royal Commission, being to the Belfast sewage purification and outfall works.

Seventy-Ninth Meeting of the British Medical Association.

The chief event of last month in the British medical world was the annual meeting of the British Medical Association, which this year was held at Birmingham, under the presidency of Professor Robert Saundby, professor of medicine in the University of Birmingham. The presidential address was given on July 25, and the scientific business of the meeting—arranged under sixteen sections — was conducted on the three following days. The annual address in medicine was delivered by Dr. Byrom Bramwell, president of the Royal College of Physicians, at Edinburgh, whilst the corresponding address in surgery was given by Professor Pordan Lloyd, of Birmangham. This was the seventy-ninth congress of the kind, and considerable interest attached to its meeting in a centre connected with one of the promising provincial medical schools founded in recent years.

A number of extremely interesting and important subjects were up for discussion in the various sections, and, as on previous occasions, the interest of the debates was added to by the presence of various distinguished foreign visitors. These discussions, amongst other things, dealt with the treatment and prevention of measles, the X-ray treatment of ringworm, the medical and surgical uses of radium, the causes of deafness, and dietetics. In the section of odontology three subjects of special importance to the public health were debated, namely, "School Dentistry and Conservative Dental Treatment Generally from the Physician's Standpoint"; "Dentistry and the Public"; "The Bacteriology of the Toothbush." Not unnaturally, an important feature of the section on Medical Sociology was a discussion on State insurance, with special reference to the Insurance Bill, which was reviewed editorially in *The Public Health Journal* for June last.

The Public Health (Scotland) Act (1897) Amendment Bill.

The object of the bill is to give statutory commissioners power within their own districts to lay and carry water pipes in exactly the same way as a local authority has power within its district under the Public Health Act to lay and carry sewers. Sir Frederick Banbury opposed the bill, which was presented last month for Parliamentary consideration, and wished to alter it so that a proprietor might have power to prevent the use of his land for water mains. The Lord Advocate refused to consent to any such amendment, and

after discussion it was negatived, and the bill was read a third time and passed.

Public Health (Ireland) Bill.

Last month in the British Parliament the Public Health (Ireland) Bill came in for a lively discussion. The bill provides in its first clause, which is the pith of the measure, for the inspection of meat on sale in each urban district, so as to protect the consumer from diseased carcasses. The bill was required because in some districts where public slaughter houses have been erected by the local authority, the butchers have not used them and there has consequently been insufficient protection against the sale of meat unfit for human food. The power to force inspection under the bill will, it is hoped, lead to more sanitary methods of slaughter and prevent diseased, especially tuberculous, meat, being sold. Mr. Booth and Sir F. Banbury criticized the proposals of the bill, but after considerable discussion all amendments were withdrawn, the report stage passed, and the bill read a third time.

State Aid for Research.

The President of the British Local Government Board has authorized the following special researches to be paid for out of the annual grant voted by Parliament in aid of scientific investigations concerning the causes and processes of disease.

1. A research into the causes of premature arterial degeneration in man, by Dr. F. W. Andrews, pathologist to St. Bartholomew's Hospital.

2. An inquiry by Dr. J. H. Thursfield, of St. Bartholomew's Hospital, into the causes of death in measles.

3. A comparison by Professor Nuttall, F.R.S., Quick Professor of Biology at the University of Cambridge, of the number and kind of fleas found on rats.

4. A continuation by Dr. C. J. Lewis, of Birmingham University, of his investigation into the degree of prevalence and the characteristics of micro-organisms known as non-lactose fermenters in the alimentary canal of infants.

5. An investigation into the same subject by Dr. D. M. Alexander, of Liverpool University.

6. An inquiry by Dr. Graham Smith, of Cambridge University, into the incidence of non-lactose fermenters in flies in normal surroundings, and in surroundings associated with epidemic diarrhœa.

7. A study by Dr. F. A. Bainbridge, of the Lister Institute, of the anærobic bacteria in the alimentary canal of infants.

8. An investigation by Dr. Graham Smith into the possibility of pathogenic micro-organisms being taken up by the larva and subsequently distributed by the fly.

An Address at the Institute of Hygiene.

Extraordinary eccentricities of diet were recorded by W. Soltan Fenwick, M. D., in an address delivered at the Institute of Hygiene in London recently.

Various odd devices, he said, were resorted to in former days to stimulate a flagging appetite, such as the drinking of spiced wines, the dropping of coins of old metal down the back, or sometimes a little exercise or gentle altercation was indulged in between the courses to "settle the food in the stomach." It became the habit at a later period to scratch or fondle the lobe of the right ear to stimulate the flow of gastric juice, as the nerve which supplies this part of the skin has a direct connection with the great nerve of the stomach.

Every one was said to possess the stomach he deserved, and there could be no doubt, that, within certain limits, our digestions were of our own making. The stomach was the most educable organ of the body, and one could reduce its activities to a degree which was only just compatible with the preservation of life, or could train it to perform twice the amount of work which nature ever intended it to do. An average man at the age of 50 had consumed about 25 tons of food, but some people easily consumed three times that amount .They never knew when they had had enough. There was an authentic case of a little girl who had to have a keeper to prevent her from eating the household goods. One day she consumed a raw codfish, several pounds of candles and a quantity of butter before she was caught. A boy, when placed under observation, got through 100 pounds of raw meat in twenty-four hours. Attempts to cure this insatiable hunger invariably failed. Another lad who was shut up and kept without

food was found to have eaten practically all his clothing.

"Many people," continued Dr. Fenwick, "possess an extraordinary relish for common salt. This often has the curious effect of increasing a person's weight. One young lady who devoured immense quantities of salt would increase as much as ten pounds in twenty-four hours. If you can persuade these people not to take salt so much they get well; if not, they die of dropsy. Many girls will devour slate pencils, chalk and vinegar because nearly all these have at some time or other beautifying properties."

Through eating meat on which flies or other insects had laid their eggs, or, similarly, green stuff which might contain insects, people often harbor larvæ in their stomachs. A wire screen was no real protection for meat, as flies dropped their eggs through it. Early examples were recorded in which strange insects and animals had been eaten and lived afterward. These included beetles, frogs, snakes, salamanders, leeches and the common garden slug.

Young children often acquire abnormal tastes, and one of the most common of these is paper eating. Hair eating is confined to girls, and a number of instances are on record in which death resulted from the formation of a great ball of hair in the stomach. Balls of thread, flock, tow or matting fibre were sometimes found in the stomachs of those who worked with these materials.

Substances, too, which were often taken, in the first instance, for amusement by frequent repetition led to insatiable desire. Thus sword swallowers, knife eaters, glass chewers and the like not only continue their practice for years, but actually got to relish them. The speaker mentioned the case of a seaman who could not resist the temptation to chew up and swallow a tumbler after he had drank its contents; and those of two boys, one of whom ate sand when he could get it, while the other begged, borrowed or stole watches in order to swallow them.

How Germany Grows.

The industrial development of Germany during the last quarter of a century has been the wonder and envy of all other European nations. The primary reason for its growth lies in the fact that since the establishment of the empire its population has increased nearly 25,000,000 — from 41,000,000 in 1871 to 65,000,000 by last year's census.

Another important factor is the improved health and increased longevity of the Germans, owing to improved health conditions in general. Better health means more time and ability to conceive and carry out business plans.

From the Emperor down, the authorities of Germany have labored for years to stay the flow of emigration to the American continent. As a result the last few years show a marked decrease in emigration to other places than German colonies.

But, while Germany has succeeded quite well in keeping her young men from going to other countries, she has not been able to keep them from leaving the farms for the cities and towns. In 1882 19,200,000 people, or 42.5 per cent. of the total population, were engaged in agricultural pursuits. After a quarter of a century she had only 17,700,000 people, or 28.7 per cent. of the population, on the farms.

The industrial increase in Germany has kept pace with the increase in population. While the "country population" has decreased 1,500,000 since 1882, there has been a great increase in the number of persons engaged in industrial pursuits in the towns and cities. So great has been the removal from the farms that only 43 per cent. of the town population is indigenous, the emigrants from the country forming 57 per cent. of the population

In striking contrast with the statistics showing the decrease in the number engaged in agricultural pursuits are these: In 1882 some 16,100,000 persons were occupied "in trade," or 35 per cent. of the population of the empire. In 1907 those "in trade" numbered 26,400,000, or 42.7 per cent. of the population.

Ten per cent. of the people, or 4,500,000, were engaged in "commerce and traffic" in 1882. In 1907 the percentage had increased to 13.4, or 8,300,000 people.

In the order of their commercial importance, the leading branches of trade in Germany are mining, the stone and earth industries, machinery, soaps, oil, chemicals

and the textile and paper industries. Germany's greatest single industrial plant is the Krupp steel plant at Essen. It gives employment to 70,000 persons, which means maintaining a population of about 240,000.

The opponents of "race suicide" can find no fault with Germany. Its births in excess of deaths almost account for the whole increase in population since the formation of the empire, the rest of the increase being due to the improved health conditions.

China and Modern Medicine.

China is a perpetual menace to the world's health. Every ship which sails from a Chinese port is a possible carrier of cholera, bubonic plague and even of leprosy to the outside world. China has all the diseases of Europe and America and many others. Against them it has no adequate medical protection, according to a report of Dr. M. R. Edwards, head of the branch of the Medical School of Harvard University which is being established in Shanghai, China.

The establishment of the Shanghai school is the beginning of a world-wide movement to combat present conditions. China is only beginning to awaken to the necessity of modern medicine. Dr. Edwards found scarcely more than twenty-five well trained native physicians, and there are only 1,000 foreign doctors in the empire.

He found a young medical student studying a book of anatomy written 2,000 years ago. The book stated that the mouth opened into the heart, the heart into the stomach, and other such absurdities. No one has dissected in the 2,000 years on account of the danger of disturbing the spirit of the body, "which would be unhappy in the afterworld."

The spirit system is the foundation of their whole theory of medicine. They have no surgery, no physiology, no bacteriology, no science of medicine. Dr. Edwards saw a Buddhist priest treat a case of typhoid fever. The man burned a pile of paper on which were written prayers to placate the spirits of the disease, while his son wandered through the house beating a tambourine to dispel the spirits. As an example of their ignorance, the same word in Chinese means artery, nerve and tendon. There is no distinction.

China awoke some years ago to the necessity of economic and educational change, but it is only during the last three years that the necessity for the adoption of western medicine has become apparent to the Chinese.

This state of affairs is a world menace. Three years ago bubonic plague was brought to our Pacific coast by ships from China; last winter Asiatic cholera was carried to Hawaii, and just now another little understood Chinese disease is epidemic on our Pacific coast. It is amœbiasis, or tropical dysentery, and it is more dangerous than cholera because it is less understood.

The Harvard school is a part of a world movement to remedy this condition. Work of three kinds will be attempted. First, there will be the laboratory for research work. Five men will give their time to this. Then comes the educational work of the institution, which will be carried on in conjunction with St. John's University, and last of all will be the effort made in co-operation with the Chinese Government to do the same sort of public health work which is being done in this country.

Public health officials will be instructed and the attempt will be made to clean up the coast cities.

The attitude of the Chinese toward modern medicine — the superstitious dread of dissection — is passing away and it will give way more and more.

The outbreak of bubonic plague in Manchuria has done much to change their views as to this. Toward the last they consented to having the bodies of the victims burned and even permitted dissection. The Government officials went in and saw the dissection of the plague sufferers.

A few years ago there was the same opposition to the building of railroads because the spirits of their ancestors would be disturbed. The convenience of rapid transit has removed this prejudice, and similarly the advance of medicine is hoped for. Already people travel 400 and 500 miles to reach one of the few modern hospitals.

Educationally and economically the advance has been great. There now are 14,000 modern schools of all descriptions, ranging from a grammar school to the universities.

The public must be taught that the health of
the nation is its most valuable asset, and
that the maintenance of health is of
much more importance than
the treatment of disease.

—*Sir James Barr: The Medicine of the Future.*

SIR JAMES BARR, M.D., LL.D., F.R.C.P., F.R.S.E.

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Special Articles

THE UNDEVELOPED FIELD IN THE LIFE INSURANCE BUSINESS

BY HIRAM J. MESSENGER, F.A.S.,
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On the 15th of October, 1910, the writer left Hartford on a trip, mainly through the South, for the purpose of studying the sanitary condition of Southern cities in the interest of the life business of the Travelers Insurance Company. As far as time would permit he visited and investigated conditions in the following cities:

Lynchburg	Montgomery
Roanoke	Birmingham
Knoxville	Atlanta
Chattanooga	Macon
Nashville	Jacksonville
Louisville	St. Augustine
Cincinnati	Savannah
Indianapolis	Charleston
Bloomington	Augusta
Springfield	Columbia
St. Louis	Charlotte
Memphis	Danville
Little Rock	Richmond
Vicksburg	Baltimore
New Orleans	New York
Mobile	Hartford

The principal points investigated were as follows:

FIRST.—The supply of drinking water.

SECOND.—The sewage system.

THIRD.—The disposal of garbage.

FOURTH.—The inspection of milk, meats and perishable provisions.

FIFTH.—The ordinances of the Board of Health for maintaining sanitary conditions.

SIXTH.—The laboratory equipment and work of the Department of Bacteriology.

SEVENTH.—The climatic conditions.

EIGHTH.—The location of the city and the natural character of the surrounding country.

NINTH.—The character of the city government—particularly the men who had anything to do with city sanitary work, with special reference to their intelligence, their efficiency and the probability of their seeing that the city ordinances are thoroughly enforced.

TENTH.—The character of the people, with special reference to whether or not they really appreciate the importance of maintaining proper health conditions in the city and whether or not there is a powerful public sentiment that can be brought to bear upon the city government in regard to such questions.

The method of procedure was first to interview the chief health officer and obtain from him as much information as possible bearing upon general sanitary conditions. After that as far as might be necessary the city engineer, the superintendent of water works, the bacteriologist and any others who might be able to give further and more definite information in regard to the subjects investigated were interviewed. The remaining time in each place was spent in making a personal observation of actual conditions. In seventeen cities the water plants were actually visited—although as a rule these plants are several miles outside of the city limits. The bacteriological laboratories were visited and their equipment and working methods studied, and in most cases where garbage was dumped on vacant lots the actual conditions were investigated in order to see to what extent the health of the community was endangered. In looking into the water system and the sewage system the worst sections of the city were selected and then some tumble-down, old dwelling picked out to see whether or not it had city water and whether or not there was connection with the sewer, and particularly whether or not on the same premises there was a well supplying surface water and a closet unconnected with the sewer, with the probability of drainage from the closet to the well. The writer wanted to see for himself how actual conditions in regard to these matters which have such an important bearing upon the health of the community coincided with the impressions conveyed by the one hundred or more officials that he had interviewed. As a rule, it was found that the officials were disposed to give the information asked for, and in the main to state the facts even if they were unfavorable—although naturally there was a disposition to give a favorable impression. However, there was frequently cause for surprise at the frankness of the officials in cases where conditions were very bad. Occasionally some valuable information was obtained from the head of one department letting the truth out rather boldly in regard to the situation in some other department, and occasionally the investigation was helped along to a considerable extent by the officials in one city asking if this or that particular situation had been discovered in the last city visited or suggesting that this or that point in the next city be looked into with special care.

Of course, two or three weeks might have been spent profitably in each city. The writer was gone only nine weeks and had only two or three days in each city. It was a physical impossibility in this short time to thoroughly study all the conditions bearing upon the sanitary situation in the cities visited, but the main object was to find out what the city authorities were doing toward taking advantage of the latest developments in modern sanitary science in order to properly protect the health of their citizens. Upon the whole, after a little experience, it was found that it did not take very long, with the aid of the officials and by personal investigation, to reach a fairly correct idea of the general situation in each place—its strong points and its weak points. To summarize the general conclusions in regard to the points which particularly attracted attention and which were particularly investigated:

First.—The evidence found practically everywhere (particularly through the Southern States) that there had been a most wonderful improvement in the general sanitary conditions during the past ten or twenty years. In fact, it is hardly an exaggeration to say that nine-tenths of the progress in the places visited has been made within twenty years. It should be borne in mind that scientific methods of disposing of city garbage, scientific methods of purifying drinking water, and scientific methods of dealing with infectious and contagious diseases by making use of the discoveries in bacteriology are, for all practical purposes, almost entirely developments of the last ten years.

Second.—The possibility of still further progress in the next ten years.

Third.—The evidence that the cities in the South in proportion to their means

as a rule are spending as much money in improvements affecting the general health of the city as in the North.

Fourth.—The great variation in conditions in cities in the same section of the country and in close proximity. As far as observations indicated it is impossible to select one particular section of the country and show that, from a sanitary standpoint, it is as a whole materially superior to another section in what is being done by the various municipalities and state authorities in the line of sanitary work. Of course, there are sections of the country where natural conditions bearing upon health are very favorable and other sections where such conditions are very unfavorable; but as far as efforts of city authorities to put the cities in the best possible sanitary condition is concerned, one can find some of the best and some of the worst instances in the South, in the North, in the East, and in the West. It was surprising to find on the South Atlantic coast a city which in the efficiency of its board of health and in its maintenance of generally healthy conditions by adoption of the very best modern methods, stands about at the top of all of the places visited—while in the same section of the country, not far from this city, was another place which, although greatly favored by nature, as far as what the city authorities had done stood near the bottom, and the most unfortunate fact was that the citizens had no conception of the real situation. It was surprising to find on the Mississippi River one city in most excellent sanitary condition, but a few hundred miles north another city whose inhabitants would resent any opinion that they are not among the most intelligent and progressive—and yet this latter place, on account of its absolutely inexcusable conditions, is down near the foot of the list.

Fifth.—The fact that the citizens and officials in general in each city, as a rule, were under the impression that, as compared with other cities, their general sanitary condition is favorable. This was apt to be the case, possibly a little more so, in a city where conditions were unusually good. There seemed to be very little exact knowledge among the officials and particularly among the citizens of any city in regard to its relative sanitary situation, and exact, reliable information on this point in the way of comparative statistics was difficult to obtain. It is generally possible to obtain full and exact information in regard to how much money each city has spent in its different departments and for what purpose, but to obtain information in regard to the results secured by these expenditures is a very different matter.

On account of this great variation in the sanitary condition of the cities and the general lack of information in each city in regard to its real situation as compared with the situation of other cities, if each city government were to appoint a competent committee to visit the city known to have the best sewage system, the best method of disposing of garbage, the best ordinances for inspection of milk, meats and perishable provisions, the best department of bacteriology and any other city noted for special thoroughness and efficiency in any particular line of sanitary work, the result would be the acquirement of an immense amount of valuable and accurate information in regard to how work of this kind ought to be done, and would enable the officials in each city to see wherein it is particularly efficient and wherein it is particularly inefficient, and would undoubtedly lead to many important improvements. There is nothing that will quicker rouse a city to proper action than being brought to a realization of the fact that a rival city is doing things so much better.

Coming now to a more detailed consideration of the principal points investigated, it was found that as a rule most of the cities visited had a fairly good supply of city water. In only a very few cases was there reason to think it was bad, and in many cases it was most excellent. In probably a dozen of the cities visited new water systems had been constructed within the last ten years, with an elaborate and upon the whole very satisfactory system of filtration—usually accompanied by sedimentation and purification by alum, lime or some other chemical method; and in nearly every one of these cases these cities ten years ago were taking impure water direct from some large, unprotected river and drinking it just as it came from the river. The decrease in the amount of sickness and number of deaths from typhoid

fever as the result of those recently constructed water systems has been very noticeable. The method of purifying water by chemical treatment is more common in the South than in the North. The usual method in the North is simply the protection of the source of supply. This method was adequate in most cases twenty years ago, but the rapid increase in our population and the great multiplication of manufacturing plants has made the securing of a pure water supply by simply protecting the source very difficult; and it is a difficulty which is rapidly increasing from year to year, so that it is only a question of time when other methods must be adopted, except where a city is fortunate enough to have an unlimited supply of artesian water. The important question in regard to the city water supply is not so much the character of the water furnished by the city water system, but the extent to which the inhabitants use the city water and the extent to which they make use of some other source of supply. The extent to which city water is used varies probably from 20 per cent. to close to 100 per cent., and although it is impossible to obtain exact figures, upon the whole probably 70 per cent. is a high estimate of the average percentage of inhabitants using city water in cities of fifty thousand inhabitants and over. The remaining 30 per cent. or more obtain their water supply elsewhere, and mainly from wells supplying surface water; nearly all of which wells were subject to contamination and many of which actually were contaminated. Of course, most of our cities are growing rapidly and to a considerable extent those who were not using city water lived on streets which had recently been laid out and the water system had not been extended to their streets; but that only applies to a portion of those not using city water. Practically every city has within its limits, on streets that are piped for city water, wells furnishing surface water that is used in place of water furnished by the city. There are many cities in this country having a good water system and fairly well piped for water and yet from 30 per cent. to 50 per cent. of its inhabitants use water from wells that are constantly in danger of contamination, and many of them actually supplying water that is not safe to drink.

Probably there is not a single city which was visited which had any systematic method in operation in any city in the country. To all inquiries the usual answer was that the water is examined in case any complaint is made—which practically meant that there was no examination unless those who are in the habit of drinking the water objected either to the taste or to the smell—although it is a well known fact that water may have a very disagreeable taste and a very disagreeable smell and yet be perfectly safe to drink; and, on the other hand, the taste and smell may be wholly unobjectionable and to the eye it may appear perfectly pure and yet the water be very dangerous to drink.

Coming to the question of sewage, the percentage of population living in houses connected with the sewer varied from 20 per cent. to 95 per cent.—with an average of probably less than 60 per cent.—although here also it was difficult to obtain exact figures. Of course, the water mains had to be extended where sewers were in actual operation. Consequently, the city water system is always more extensive than the sewer system. As in the case of the water system, portions of the city not sewered were largely the new portions where new streets were being opened, but at the same time in practically every city visited it was possible to find old sections of the city, sometimes extensive sections, which were not sewered—and in a great many cases it was possible to find streets that were properly sewered, properly piped for city water—but frequently in such cases a large number of the houses did not have sewer connections. In two cities (one of them one of the largest cities in the country) the board of health had no authority to compel residents to connect houses with the sewer on streets that were properly sewered and properly furnished with city water; but as a rule the cities had this authority, but the extent to which the authority was used varied greatly. In general, it can be said that it is possible to find many cities in the country that have spent millions of dollars for sewers and for extending the city water systems, and yet from a quarter to more than half of the inhabitants live in houses that are

not connected with the sewer, and in a great number of such cases the situation is a closet, with no sewer connection, and nearby a well furnishing surface water and constant danger of contamination; and it cannot be said that these are entirely in the new sections of a growing city where sewer and water mains have not been extended. A large number of these cases are on streets that have been sewered and have been furnished with water mains, and frequently in the oldest and most thickly populated parts of the city.

In regard to the disposal of garbage, conditions in most cities were unsatisfactory. The most sanitary way of disposing of garbage is probably to burn it. About half a dozen of the cities investigated had incineration plants, and, as a rule, these plants were working in a reasonably satisfactory manner—and if they were not it was generally because the work of collecting the garbage for burning was subject to political influences with unfavorable results. In the great majority of cases the garbage is dumped on vacant lots, frequently within the city limits, and sometimes not far from the heart of the city. In some cases, to a certain extent, it is disinfected; but there was not a single case where the work of disinfecting the garbage seemed to be thorough and not a single competent official was found who claimed that the thorough disinfection of garbage dumped on vacant lots is possible. Of course, sanitary methods of disposing of city garbage and waste matter in general are still in the experimental stage, and no method has yet been found which is in every way satisfactory. Nevertheless, it is difficult to find any modern method which is not vastly superior to the dumping of garbage on vacant lots within the city limits.

Ordinances for inspection of milk, meats and perishable provisions were quite general, and it is clear that they are being enforced with increasing effectiveness every year; but successful work of this kind depends mainly upon three things: freedom from political control, a competent, and particularly a courageous board of health and a strong public opinion in favor of thorough enforcement of the work. Compared with the situation ten years ago there is room for much congratulation—but it is equally true that there is still room for much improvement.

The science of bacteriology in connection with city sanitary work is comparatively new. Ten years ago there were probably not a dozen cities in the country which had such a department. Ten years hence there will hardly be a city of fifty thousand inhabitants without such a department. At present the condition in different cities shows great variation. One city visited, one of the most prosperous and progressive places in the country, has a department which is unworthy of the city. Such a department ought to be an example of cleanliness at least. This department was just the opposite. Another city of less than seventy-five thousand inhabitants had a thoroughly equipped, liberally supported department, with the most competent experts, and in every way a model. Even the bacteriological department in the great city of New York, which was the forerunner of such departments in this country, did not make as favorable an impression, taking everything into consideration. It will be a liberal education to our health officials throughout the country to inspect this modern department of bacteriology and make a report of what is being done to their home cities.

Coming now to the consideration of some special points, the following is quoted from the annual report for 1910 of the department of health of a city of less than one hundred thousand inhabitants and the capital of one of the leading states of the Union:

"There are 7,000 shallow wells in the city and the pollution of these wells is assured by 6,000 privy vaults.

"There are 9,000 homes in the city, 6,000 of which are not connected with city sewers or water mains for sanitary purposes. The sewer and water systems of this city have cost the taxpayers approximately $4,000,000. This means that the public expenditure of $4,000,000 for sanitary purposes is utilized by but one-third of the population and the benefits which should be derived by the community are lost.

"Since 1902 the typhoid fever mortality of the city has been high compared with that of other cities. In 1903 it was 46 per 100,000 of population, while the aver-

age of registration cities of the nation was but 24.6; in 1904 this city's typhoid rate was 36, while the average of registration cities was 24; in 1905 this city, 38.4, with average cities, 22; in 1906 this city, 35.6, average cities, 34.2; in 1907 this city, 81.7, average cities, 31.7; in 1908 this city, 35.1, average cities, 25.8; in 1909 this city, 32, (mortality) rate in this city jumped to 51 per 100,000 of population."

The board of health in the city referred to in the above quotation has no power to compel residents to connect their houses with the sewer on streets supplied with city sewers and city water. Recently, stirred up by the energetic action of their able superintendent of the board of health, the city council was able to pass an ordinance requiring all persons building or rebuilding in the future to make proper sewer and water connections for their property and to condemn all vaults now on the premises supplied with sewer and water. This, of course, will result in a great improvement, but the ordinance does not go half far enough, and unless the board of health is given much greater power it will be many years before the city is in proper sanitary condition.

In another large city, which upon the whole is in fairly good condition, the city authorities have no power to compel residents to connect their houses with the sewer and an ordinance giving them this power was introduced in the council, but was opposed by the real estate exchange on the ground of expense to property owners and was defeated. Here also is a great opportunity for an organization of public-spirited citizens to compel the passage of the proper ordinance and so wipe out the disgrace which now rests upon one of the leading cities of the country.

In a large city in the South one of the great public markets was visited and the conditions were simply revolting. Great quantities of meat, vegetables and more or less over-ripe fruit were displayed in an open market extending for two blocks, with no kind of protection for the perishable provisions. Never were such swarms of flies seen before. In one case a big piece of meat was so covered with flies that it was really difficult to make out what it was. Fortunately, a movement is on foot to have this market done away with. All public markets of the kind ought to be abolished. It is impossible to maintain sanitary conditions as long as such things exist. On the other hand, in the city of Montgomery, Alabama, there was evidence of quite satisfactory enforcement of the ordinances for screening meats and perishable provisions. Not only were screen-doors required at the entrance of the market, but screens over the individual displays of perishable food. Fruit-stands on the streets were furnished with cases with screen-doors, and during the summer months no fruit was allowed to be exposed for sale without proper protection. The fly is one of our most deadly enemies and the protection of meat and provisions from his fatal work is absolutely necessary if the public is to be protected from contagious and infectious diseases. This screening of provisions displayed in our markets is a comparatively recent precaution. It is of special importance through the South, where the heated term is much longer and the fly pest much more serious; but, although there are only a few cities in the country where at present these ordinances are thoroughly enforced, the work is rapidly extending and it only requires proper education of the public and proper expression of public opinion to bring about a thorough enforcement of ordinances in regard to this matter in practically every city in the Union within ten years.

One city visited, particularly favored by nature, on high ground, well drained, with a fine climate, specially attracted attention on account of the general ignorance on the part of the people of the real situation and the general incompetence of all the city officials having anything to do with the city's health. Conditions, as far as anything done by the city government is concerned, were bad. Probably not more than one-third of the people used the city water. Probably not more than one-quarter of the people lived in houses connected with the sewer. The general rule was a vault unconnected with the sewer and a well furnishing surface water on the same city lot. There was not an up-to-date, efficient officer who had anything to do with the care of the city's health; and, while the situation in regard to the water system and the sewer system has probably

been stated with approximate accuracy, yet the fact is that practically all the answers to questions were simply guesses, because no one knew the real facts.

Another city is in a very unsatisfactory situation, because for years it has been in the hands of a political boss. It was very difficult to obtain any real information in this place, because most of the department heads engaged in any work connected with the health of the city are simply creatures of politics and in general very ignorant and incompetent as far as sanitary science is concerned. There was a good man at the head of the Department of Bacteriology, but it was discouraging to see the humiliating character of his position. He knew what ought to be done, but he also knew that efficient work was impossible because everything was under the control of the political boss and efficient action and enforcement of health ordinances was very frequently made impossible by political interference on the part of some person who had a pull. He realized the situation and knew that any serious protest on his part would simply mean that he would lose his position. In general the stay made in each city was not long enough to grasp the political situation, but it is quite likely that what was discovered in this one instance is largely true in many of the cities visited—and to some extent in practically all.

One city was found to be in most excellent condition in practically every respect, as far as what could be done by city authorities in applying methods of modern sanitary science. Savannah, Georgia, is the city referred to. Quite a number of other places visited are more favored by nature by being situated on high ground, with excellent drainage, free from swamps and with favorable climatic conditions; but if Savannah is not particularly favored in these respects it certainly has taken full advantage of all the possibilities in sanitary science. The city has in its head of the board of health Dr. Brunner, an unusually capable man and a man whose energy and courage in enforcing the health regulations of the board is refreshing in contrast with the weak and halting actions of many health officials. At the head of the Department of Bacteriology is Dr. Bassett, an expert from Johns Hopkins, who secured the position in a competitive examination with many expert bacteriologists as rivals. The department is most thoroughly equipped with the latest apparatus, with a fine scientific library and all of the necessary supplies for efficient work. Although Savannah has only sixty-five thousand inhabitants its Department of Bacteriology is known as the best in the South, and it is doubtful if there are half a dozen better equipped and more efficient departments on the continent (including our largest cities. The city is very completely piped for water obtained from artesian wells, and the sewer system is nearly as extensive. The city was searched from one end to the other for a surface water well without success. In the worst negro section at the east end and at the west end some of the most wretched, tumble-down negro hovels were selected and examined and in every single case, after picking out the worst houses in the worst quarters, sewer connections and city water were found. Savannah was examined more thoroughly than any other city visited, but not a single well was found within the city limits nor a single house not connected with the sewer. After leaving the city it was learned that there is one small section which, on account of its presenting a difficult engineering problem, is not sewered; but even this part is furnished with city water and plans are under consideration for extending the sewer through this district.

The writer has thus outlined the results of his investigation of conditions in these cities and has brought the subject to the attention of the Association of Life Insurance Presidents for a special reason which will now be briefly explained. The success or failure of a life insurance company, assuming honest and intelligent management, depends upon three things—the expense rate, interest rate and mortality rate; and in a thoroughly established, well-conducted company these factors are of approximately equal importance. As a rule, companies have paid great attention to the expense rate and the interest rate in all its bearings upon the business, but in the matter of mortality rate in all the wonderful development of life insurance in this country the past sixty years the efforts to secure

a favorable mortality have been practically confined to the benefits resulting from a careful initial selection of risks, while the question of what can be done to lower the mortality rate and to keep down the claims by efforts to postpone or to prevent the death of the insured while the policy is in force has hardly been given serious consideration.

Here is a field of work which it is possible to make of really great importance. Life insurance executives have the reputation of being shrewd, practical, level-headed business men who know their own interests. Here is an opportunity for them to do a great work for humanity and at the same time directly benefit their own companies and policy-holders. Here is a wholly neglected field of activity having a direct bearing upon the financial success of the business which they are conducting. There is no question of the decided improvement in the mortality rate of the country during the past fifty years as the result of progress in sanitary science and its practical application, and, while this improvement has been greatest at the younger ages, it has been very considerable at the insurable ages under forty, and about three-fourths of the insured take out policies under forty. There is no doubt that policy-holders have gained millions of dollars as the result of this improvement. There is no doubt that the possibilities of improvement in the future are fully equal to the improvement which has taken place in the past. It would be a great mistake, however, to attribute all of this gain from favorable mortality to the benefit resulting from initial selection of risks by the medical examiners. A very large part of this gain is due to a lower mortality resulting from improved sanitary conditions, for which improvement life insurance companies and their officials have very little right to take credit. Mortality statistics for the general population, mortality statistics on certain classes of uninsured lives where the question of medical selection does not enter, show a very decided improvement in recent years for ages under forty.

In order to appreciate this phase of the subject, and especially its important bearing upon life insurance, it will be well to consider for a moment the immense gains resulting from a comparatively slight improvement in the mortality rate. The regular life insurance companies in the United States, not including the industrial business, are paying about $150,000,000 a year for death claims. This is about $12.00 per thousand dollars of insurance in force. If the rate of loss were reduced from $12.00 to $11.00 per thousand of insurance the companies would gain in reduced claims about $12,500,000 every year. To secure a favorable mortality these companies are paying about $6,000,000 a year for medical examinations and inspection reports before the risk is accepted—and practically nothing for this purpose after the policy is issued. If they were to expend half as much in a combined general effort to lower the mortality rate probably the results in dollars and cents would be fully as great as results obtained from the money already expended on initial medical examinations. The average policy is for about $2,500, and the average premium about $100. If a company postpones the death of one of its policy-holders for one year it means an advantage to the life prolonged which can scarcely be measured in dollars and cents. To other policy-holders who in the last analysis pay the death claims it means that they receive one more premium ($100) and have another year's use of the amount of the claim ($100)—making a total of $200 additional receipts as the result of postponing the insured's death for one year. If this could be brought about by the expenditure of $5.00 or $10.00 or $25.00 it does not require any unusual acuteness to see that the investment is a good one for policy-holders.

These considerations, together with the results of the investigation made of sanitary conditions throughout the country, lead to the conclusion that what is wanted is an organization in each city throughout the whole country of a number of intelligent, substantial and influential men with practical common sense, interested in all work to improve the sanitary condition of all of our cities and having enough technical knowledge of modern sanitary science to know the relative importance of things, what ought to be done and how to do it. It is possible to form such an organization in every city in the country (a sort of a

league of municipal sanitary clubs) and if they could only have the backing and general direction of some really powerful and influential body there would be no doubt of the results. In every city of fifty thousand inhabitants in this country it is possible to find among the managers, the leading agents, the medical examiners and the legal and financial representatives of the insurance companies fifteen to twenty men of standing, of influence and of a high average standard of intelligence. From these men, together with two or three of the leading health officials and a few other men of prominence interested in such questions, could be formed an organization, which, if directed and given to understand that they would be thoroughly supported by the organized life insurance companies of the country, could exert an influence in bringing about better sanitary conditions—which would mean the saving of millions of dollars to the life insurance policy-holders of the country.

With such an organization in a city of fifty thousand inhabitants, working intelligently and earnestly, knowing that they have the powerful support of the great life insurance interests of the whole country, it would not be long before every city in the country would have proper authority to compel residents living on streets having sewers and city water to connect their houses with the sewers, and the power would be used. It would not be long before there would be a very great decrease in the number of instances where there is a vault unconnected with the sewer and a well giving surface water on the same premises, and drainage from the former to the latter. The unsanitary public markets, with their swarms of flies, would be rapidly done away with and in time completely abolished. The ordinances for screening of meats and perishable provisions would be more thoroughly enforced. The unsanitary dumping grounds for city garbage within the city limits would be done away with and incineration or some other sanitary method of disposing of city waste would come into general use. Each city of over fifty thousand inhabitants would have a well-equipped department of bacteriology, with an expert in charge, and the practical results would soon be seen in a great decrease in the death rate from infections and contagious diseases. It would mean a blessing to humanity and millions of dollars saved in the cost of insurance.

There is just one really great difficulty, and that is in getting the life insurance officials to appreciate the importance and value of the work and in getting them to work together—earnestly, unitedly and harmoniously—sinking their own individual company interests in an effort to work for the common good. The proposition is not theoretical—it is eminently practical. Unfortunately, it is difficult to get most people really interested in such a proposition. The trouble is that the fearful results of unsanitary conditions are with us all the time and have been with us for years. We become accustomed to them and consequently it is hard for us to wake up to the situation and the possibilities. A few months ago the whole country was horrified by a fire in the working rooms of the Triangle Shirtwaist Company. One hundred and fifty employees, shut out from all means of escape, mostly young girls, suffered the agony of being burned to death. Twenty-four hours afterward the whole country was aware of what had happened and everyone was stirred with pity for the unfortunate and condemnation of those who were responsible for such an awful catastrophe; and yet only one hundred and fifty lives were lost, while every year in the city of New York alone over fifteen thousand people die from infectious and contagious diseases—diseases every one of which is classed under the head "preventable," diseases the ravages of which we positively know by the adoption of proper methods can be to a very great extent permanently checked. A reduction of only one per cent. in the number of these deaths would save more lives than were killed in that awful conflagration.

It is to be hoped that the Association of Life Insurance Presidents will take the lead in definite and energetic action along the lines indicated in this paper. There can be little objection from the standpoint of expense because it would be difficult to develop any way of doing effective work, which would mean so little expense as for the association to establish, direct and help a league of city sanitary clubs.

TYPHOID FEVER

CHARACTER OF THE RECENT EPIDEMIC AT OTTAWA, JANUARY 1st TO MARCH 18th, 1911

BY MAJOR LORNE DRUM, M.D., D.P.H.

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Typhoid fever has been almost a constant factor in the monthly mortality returns of the city of Ottawa for several years past, but at no period up to the end of 1910 was there any marked increase in the number of deaths reported. During the past ten years, 1901-1910, 200 deaths have been reported, and of these 38 died in 1907 and six in 1903, the years of greatest and least mortality from the disease. The average was 20 deaths a year. In 1910 the mortality was 24. Up to March 18th, 1911, the date at which the investigation closed, in a period of 11 weeks there were 52 deaths for 1911. The incidence of this disease during the past ten years cannot be ascertained owing to the obvious incompleteness of the official returns. For instance, in the year 1909, 58 cases only were reported, while 23 deaths were recorded. In 1910, 80 cases were reported, with 24 deaths. Obviously, this mortality is incredibly high for the number of cases, and one is justified in concluding that during these years and the preceding ones, many cases of typhoid fever have occurred in the city unreported, and that the totals of 58 cases for 1909 and of 80 for 1910 are considerably below the real numbers.

Taking these figures as they are, however, we find that in 1910, the monthly incidence was as follows:—January 5, February 9, March 14, April 1, May 1, June 1, July 1, August 13, September 7, October 5, November 18, December 5, total 80.

During the investigation a few more cases (five) were found to have occurred in December, making a total for this month of 10, distributed as follows: One on the 1st, one on the 3rd, two on the 15th, one on the 16th, one on the 22nd, two on the 23rd, one on the 24th, and one on the 28th. The incidence of typhoid in this month, therefore, showed nothing unusual compared with previous months. On January 1st, however, the incidence of typhoid increased abnormally, and remained so for 11 weeks (the record was shown on an accompanying diagram). As may be seen, in the first week (Sunday, January 1st, to Saturday, January 7th,) there were 31 cases, the second week 70 cases, third week 136 cases, fourth week 111 cases, fifth week 119 cases, sixth week 118 cases, seventh week 114 cases, eighth week 94 cases, ninth week 79 cases, tenth week 25 cases, and finally, in the eleventh week (March 11th to March 18th) four cases. In all there were 1,196 cases, of which 901, or about 75 per cent., were investigated. The remainder could not be located for investigation, owing to removal, wrong addresses and other causes.

Of the 901 cases investigated, 52 died before March 18th, the date on which the investigation closed, making a death-rate of 5.7 per cent. As, however, several deaths have been reported since the death-rate is probably higher. According to sex the cases investigated were fairly evenly divided, 422 being males and 479 females. The ages ranged from three to 75 years, but the age periods most susceptible to typhoid infection—viz., 15 to 30 years, furnished 47 per cent. of the cases. 33.4 per cent of the cases were children under 15 years of age. (The classification for each age was shown on an accompanying diagram.) No class nor occupation was exempt. Rich and poor alike suffered. Spot maps were made for each week of the epidemic, and showed that the disease from the first was distributed generally throughout the city. Every case had used the city water supply in some form, either for drinking or domestic purposes. No

Read at the Symposium on Typhoid Fever and Water Supplies at the Congress of the Canadian Medical Association held in Montreal, June 7th, 8th and 9th, 1911.

other common factor was found. The milk supply was carefully investigated, but nothing was discovered pointing to infection along these lines. Other food supplies were likewise excluded. Again, the fact that several of the cases occurring in the first two weeks were in houses without water-closets, and in some cases without even sinks, proved that the source of the epidemic was not to be looked for in sewer emanations. Lastly, the winter season excluded the possibility of infection by flies or from unsanitary conditions surrounding premises.

Thus, by a process of exclusion, the probable source of the infection was brought down to the water supply, and a rigid inquiry was instituted to discover if any abnormal conditions were at work during the three weeks preceding the outbreak which might have caused an unusual amount of pollution to enter it. That the water was liable to occasional pollution was a known fact, as reports on samples sent to the Provincial Public Health Laboratory at Toronto had at various times shown the presence of intestinal organisms. It may be noted that the mouth of the intake pipe of the water supply is placed in the main current of the Ottawa River towards the north bank, well above the city sewer outfalls. From there the water main runs along the bed of the river in a winding course through Nepean Bay to No. 1 pier, where it enters the channel of the aqueduct. Along the bed of this artificial water-course it runs for a distance of about 1,000 yards to the pumphouse. Now, the city of Hull, situated across the river from Ottawa, takes its water supply from the same main current of the river, yet Hull was remarkably free from typhoid this year. Also, tests made of the water at the intake showed it free from sewage pollution, while similar tests clearly showed the presence of intestinal organisms in the tap water. Therefore, the source of the pollution entering the water was to be looked for after the water had entered the intake. At No. 1 pier an emergency valve had been placed in the main by which water could be drawn into the pipe from the surrounding Nepean Bay water whenever the occurrence of fires made the ordinary supply of water unequal to the demand. This valve had been opened at several times for various periods during the three weeks preceding the outbreak. Now, the water in Nepean Bay is polluted and unfit for drinking purposes. Within a distance of one mile along the shore of this bay, above No. 1 pier, several sources of pollution exist. First of all there is a large railway yard, with workshops, cattle pens, and but recently disused privies. The surface drainage from these premises empties into the bay chiefly through a small stream, which is practically an open sewer. Further up along the bank are several premises, including a mill and a large stable, all without sewer connection, while within a distance of a mile is the mouth of Cave Creek. This creek runs through Hintonburg and Mechanicsville (the former a portion and the latter a suburb of the city), and receives not only the surface washings from a large number of premises, including streets and stables, but also from privies, of which there are 106 close by, and in several instances directly over the stream. Further up the river bank are numerous cottages culminating with the large summer settlement at Britannia, but it is not necessary to go any further. Nor is it necessary to say that tests of the water in Nepean Bay confirmed the evidence of the senses. Polluted water, therefore, was being admitted to the water supply every time the emergency valve was opened. But other factors had to be looked for, as the emergency valve had been opened on previous occasions. The usual factors were found, firstly, in the very low condition of the water in the river, thus not only requiring the more frequent opening of the valve to supplement the diminished pressure at the intake, but also concentrating the pollution; and, secondly, in the diversion of this polluted water directly towards the current which passes pier No. 1 by the freezing of the shallow places in the bay down to the bottom. In addition to the emergency valve, there is the strong probability of the entrance of polluted water through leaky joints in the main in its winding course along the bed of the bay.

In this paper it is not necessary to take up the other factors which were investigated, and which may have added to the pollution of the water supply. The above facts are sufficient to show that the water

supply was polluted by the sewage contained in the Nepean Bay water, and it will be admitted that such pollution was sufficient to cause typhoid infection. It is not considered necessary to demonstrate the specific occurrences of excreta from typhoid cases in dealing with water supplies polluted by the sewage of many people. Of course, inquiries were made as to the incidence of typhoid in those portions of Hintonburg and Mechanicsville bordering on Cave Creek, and the history of a few cases obtained, but the well-known and accepted facts concerning the presence of typhoid "carriers" renders this portion of the investigation superfluous to the main issue.

Having now found out that the cause of the epidemic was in all probability due to the water supply, and that this supply was infected, the next step in the chain of evidence was to see whether the remedies applied to the water supply had any visible effect on the course of the epidemic. The effect, I think you will agree, was conclusive. On January 13th the emergency valve was opened for the last time, but still evidences of pollution were found in the tap water, very likely coming in through leaky joints in the main along the bottom of the bay. On February 1st a plant was installed at No. 1 pier for the disinfection of the water by the hypochlorite treatment. At first .5 parts per million of available chlorine were used, but this quantity was increased to .75 parts on February 15th, as it was found that *bac. coli* were still in the tap water. This quantity was increased on the 19th to 1 part per million, and again on the 23rd to 1.5 parts. Up to that time *bac. coli* were still found in the water, but none since up to the final closing of the investigation. Therefore, from February 23rd we may consider the water supply as no longer a causative agent in the epidemic. Now, what happened? In that week, the week ending February 24th (and eighth week of the epidemic), 94 cases occurred; in the next week (the ninth week) 99 cases occurred, and in the next week (the tenth week) 25 cases occurred; and finally, in the last (or eleventh week), 4 cases occurred. In other words, all the cases occurring since the elimination of the water supply as a source of infection may be assumed to have received their infection before that event, and that since then no further infection occurred. Once the source of infection by means of the water supply was removed, the epidemic ceased. We may, therefore, justly conclude that the epidemic was due solely to the infected water supply. Of course, there were some cases due to contact and secondary infection through food, but the original and continuing factor was the water supply.

The general characters of the epidemic, its sudden outbreak, its general distribution to all parts of the city and to all classes and conditions of the population, agree with those of other water-borne epidemics. Its occurrence in winter is in conformity with similar outbreaks in cities of Canada and of the Northern States of the Union, which have been traced to polluted water supplies. The mortality was low, and, as is usual in typhoid epidemics, many cases were of a very light nature. The probable occurrence of a larger number of cases from secondary infection through flies, etc., continuing long after the water had been rectified, was obviated by the season.

THE MEDICINE OF THE FUTURE

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There can be no doubt that the great advances of medical science have been of enormous advantage to individuals, and have enabled innumerable persons to survive who would otherwise have succumbed to the stress of circumstances, but how far

Substance of the address in medicine delivered at the Annual Meeting of the Canadian Medical Association, June, 1911.

this has been an advantage to the evolution of the human race as a whole is a disputable point. Karl Pearson says:

The very existence of human society depends upon a strong gregarious instinct, having been evolved among men. Our highest human product, sympathy with our fellow men, is as much a product of evolution as the gregarious instinct of a herd of deer, or the combined action of a pack of wolves. Only it is more completely developed, and with increasing knowledge we have lost more and more touch with its instinctive gratification. The sympathy is there, ready to run riot in a thousand ways, which sober reflection may not show to be for the ultimate advantage of the herd. It is easy to give a shilling to a beggar, to subscribe a pound to a charity, or to found stipends for the blind or the deaf and dumb. Our strong instinct of sympathy with suffering has been gratified, but shall we really have contributed to the total enjoyment of the race? May be, and may be not—the pedigrees of general medical and physical degeneracy which I place before you may help you to a judgment. Of one thing, however, I feel sure, that no judgment will lead to lasting social gain which is reached by appeal to the emotions, which is based on inadequate knowledge of facts, or which collects data with the view of supporting any preconceived opinion.

The Scriptures say that it is more blessed to give than to receive, and I think I can claim, on behalf of our profession that, whether we have always been right or not, we have been ever actuated by a spirit of altruism. The process of vicarious charity, at the expense of the medical profession, has gradually grown so that in the present day at least a fourth of the population of England receives free medical advice. Why should all this charity be necessary? Why should such a large proportion of the population be pauperized? It would seem to me that it is because we are producing an inferior breed, because we are not raising up a healthy, independent race. The struggle for existence is not merely an individual question, but it is becoming more and more a national question, and the nation which produces the finest race is sure to win in the long run. As Professor Arthur Thomson says, what children usually die of is their parents, and what a nation dies of is lack of men.

In future medical men must not be content with treating the diseases of the community, they must point out the lines along which the nation is to be improved by encouraging the multiplication of the fit, and controlling the increase of the unfit. The public must be taught that the health of the nation is its most valuable asset, and that the maintenance of health is of much more importance than the treatment of disease. This departure in placing physiological processes before pathology involves a higher form of medical education than that prevalent in our medical schools of today—an education in which only men of the highest intelligence should take part.

"Prevention is better than cure" is one of those half-truths which readily command public acceptance as axioms which cannot be gainsaid; but it is not Nature's method, and medical men are incessantly talking about following the laws of Nature. The prevention of disease is very important to the individual, but when it enables undesirables to go on generation after generation propagating their species it can be of no advantage to the race. In an address on preventive medicine which I gave four years ago I stated that if the public were only alive to their own interests they would pay medical men liberally for directing them in the paths of truth and in the ways of health rather than for treating their diseases. If the money which is spent in the treatment of disease were devoted to the preservation of health, our huge hospitals would not be half filled, purveyors of synthetic remedies and artificial foods might find a suitable place in a home for the destitute, the necessity for surgeons and specialists would largely disappear and physicians would be fully occupied in advising their *clientèle* on the preservation of health and in looking after the aged. I am afraid we are still a long way off those halcyon days when our hospital buildings will be pointed out as relics of a decadent age; but still we should at least aim at transmitting high ideals to our successors. We can best attain those ideals by improving the stock; no environment will ever produce a genius.

Hitherto medical men have been devot-

ing all their energies to the environment, adapting the environment to the individual, not the individual to the environment, thus not assisting the race to take care of itself. Attention, however, to the environment is absolutely essential in the prevention of disease. Although disease is Nature's method of killing off the unfit, it often severely damages those who survive, and is thus a slow and crude method of improving the race. Man has now risen superior to natural selection, and insists on living when all natural forces are against him. Medical science has succeeded in suspending the natural selective death-rate, and sentimentally renders the existence and rapid multiplication of the undesirables an easy matter. In the old countries the undesirables are increasing at a much more rapid rate than the mentally and physically fit. Those countries which have to a large extent suspended a selective death-rate, but are not wise enough to establish a selective birth-rate are certain to decay, and go the way of all the ancient nations who disappeared and made way for more vigorous races. You have got here a young country, a virgin soil, and you should see that it is peopled by a vigorous and intellectual race. You should shut out all degenerate foreigners as rigidly as you would exclude a mad dog. Do not follow our example, and make your shores a dumping ground for the rubbish of Europe. I believe you have already got a fair share of degenerates, but your population is still small, and there should be no difficulty in eliminating the unfit in the course of a generation or two.

When I was first in Canada, thirteen years ago, I read some literature about the rapid reproduction of the French-Canadians, and the marked contrast in the size of their families to those in France. It was then calculated that, at the same rate of fertility, in about a century they would not only populate the whole of Canada, but would overrun the whole of North America. The Yellow Peril was not in it with them. However, I do not yet notice much change. A large number of you have not yet been pushed westward. Nature has her compensations, and this is evidently proving a saving grace to a less prolific breed. A high birth-rate is accompanied by a large infantile death-rate, and the natural increment in the population is not unduly excessive. Natural selection is still in force; the weaklings are being killed off, and no doubt a strong and vigorous race is left behind.

The crude birth-rate for 1,000 persons living in Ireland, the Province of Ontario, England and Wales, and Scotland in 1909 was respectively 23.5, 24.9, 25.6, and 26.4. On the other hand, if we take the fertility of 1,000 wives between the ages of 15 and 45, we find that the Irish wives head the list, the numbers being: Ireland, 289.4; Scotland, 271.8; England and Wales, 235.5; and France, 157.5. I have not been able to get such statistics from Canada.*

Now when we come to the corrected death-rates at all ages for 1,000 living in 1909, we find the rate in Scotland: males, 18.56; females, 16.73; England and Wales: males, 18.37; females, 16.04; Ireland: males, 16.25; females, 16.90. In Canada in 1901, for both sexes, 15.10. In Ireland, Norway, Sweden, and Australia the infantile mortality is very low. In Ireland the death-rate for children under 10 years of age is very much lower than in England and Scotland, but it is rather higher among individuals from 10 to 35 years, and then there is a decided fall till the age of 75. Above that age the death-rate in Ireland rises rapidly, and it might look as if Ireland was a dangerous place for old people to live in, but it is simply due to the proportionately greater number of old people in Ireland. There is no evidence to show that the high mortality is due to the old age pensions.

The higher death-rate in Ireland from 10 to 35 years is almost entirely due to tuberculosis, and the lower death-rate at all other ages, except extreme old age, points indubitably to the fact that tuberculosis is one of Nature's methods of getting rid of the unfit. The wave of enthusiasm over the conquest of consumption is so overwhelming in the present day that it requires a very bold man to say a word in favour of the tubercle bacillus. Dr. D. W. Hunter, of the Royal Albert Asylum for Idiots, in criticizing a recent work on the conquest of consumption, said *inter alia*:

Many an imbecile owes his existence to

* For my Canadian statistics I am very much indebted to Dr. Peter H. Bryce, of Ottawa.

the fact that his parents failed to die of tuberculosis. . . . Again, as regards insanity, the authors themselves estimate that, roughly, one in every eight consumptives is likewise insane. This tendency to consumption among the insane they explain by the lowered resistance of the soil during the attack of insanity. This may be so, but it is certainly not the whole story. While, during the last fifty or sixty years, the death-rate from tuberculosis has steadily diminished, we are, on the other hand, faced with a very ugly rise in our insane rate. Since the insane show such a marked tendency to tuberculosis, it is not improbable that the diminishing death rate from tuberculosis has played a considerable part in the increase of insanity;

And again:

Let us take the case of the idiot. The death-rate among idiots is about ten times that of the normal population at the same age. Further, of deaths of idiots, about 80 per cent. are due to tuberculosis. Now an idiot has not even the resisting power necessary to die of phthisis. He dies of acute tuberculosis, death taking place in from three to six weeks from the onset of the illness. Surely here there is some inherited lowering of the soil. There are some 150,000 (estimated) of these defectives in England and Wales, and for every defective there are from six to a dozen of his relatives only a shade better than himself. Practically the same holds for insanity, yet we are asked to believe that a man cannot inherit a soil which will remain during his lifetime permanently below the average in resisting power.

Further:

Until we have some restriction in the marriage of undesirables the elimination of the tubercle bacillus is not worth aiming at. It forms a rough but on the whole a very serviceable check on the survival and propagation of the unfit. This world is not a hothouse, and a race which owed its survival to the fact that the tubercle bacillus had ceased to exist would, on the whole, be a race hardly worth surviving. Personally, I am of opinion, and I think such opinion will be shared by most medical men who have been behind the scenes and have not allowed their sentiments to blind them, that if to-morrow the tubercle bacillus were non-existent, it would be nothing short of a national calamity. We are not yet ready for its disappearance.

These are wise and weighty words, but it would be too much to expect that they would command public acceptance, because there is nothing in the present day which people hate so much as the truth when it conflicts with popular sentiment.

Dr. Osler, in a recent lecture in Dublin on the fight against tuberculosis, said: "And, lastly, for our great consolation, we know that the disease is not hereditary, and for this let us be thankful." We know nothing of the kind, although we are constantly having it dinned into our ears by medical men who ought to know better. We know that the tubercle bacillus, which is a necessary element in the production of tuberculosis, is not transmitted in the germ plasma, but the long, narrow, flat chest, delicate lungs and feeble resisting power to the tubercle bacillus and to many other germs are undoubtedly inherited, just as much so as the shape of your nose or the colour of your hair. Medical men who are shutting their eyes to the truth and encouraging matrimony and the propagation of the species by mental and physical weaklings are incurring a fearful racial responsibility, and their action should be condemned in no uncertain language.

I am in favour of the abolition of tuberculosis, because I advocate artificial to assist natural selection. Moreover, tuberculosis is a poor method of a selective death-rate compared with typhus fever, which we have practically abolished. The latter disease cleared off the weaklings without doing any permanent injury to the survivors, but tuberculosis seriously damages the survivors, is a very slow and expensive disease to combat, and many an individual succumbs who would be a worthy citizen in a better environment. By all means improve the environment, improve your sanitary conditions, which will be beneficial in preventing tuberculosis and many other diseases. As far as possible destroy the tubercle bacillus, both human and bovine, and see that the milk supply is free from such organisms. Above all, both for the prevention of insanity and consumption, discourage and prevent the propagation of the species by the mental and physical

weaklings. Raise up a race which will not be catching tuberculosis or anything else.

The medical officers of health are doing an enormous amount of good work in attacking the sources of supply of the tubercle bacilli, in preventing their dissemination, in looking after the milk supply, and in improving the sanitary conditions under which we live; but your blatant propagandist must see the disease before he begins to stamp it out with tuberculin dispensaries and sanatoriums. Dr. Barendt has reckoned that in the Middle Ages there were over a hundred leper houses in England when the population was less than four millions; there were also a few such houses in Scotland and Ireland. Leprosy was stamped out not so much by the leper houses as by improvements in the habits of the people, and by a holy abhorrence of the disease, so that the lepers took little or no part in adding to the population. It was laid down as a rule that the attendants or nurses at the leper houses should be discreet women of mature age.

During the last fifty years there has been a steady decline in the incidence of tuberculosis in England and Scotland, while in Ireland it has remained about stationary. On the other hand, during the same period the insane population of England and Wales has increased 250 per cent., while the whole population has only increased 81.6 per cent., and in Ireland, with a falling population, the increase has been about 100 per cent. The ratio of the insane to the general population is in England and Wales 1 in 278, in Ireland 1 in 158, and in Scotland 1 in 266. This is not all, as there is an even greater number of mental defectives in the three countries.

If you abolish the tubercle bacillus in Ireland then it will certainly become a question of "God save Ireland." Are the insane and defective-minded to be allowed to go on multiplying at the present rate? I do not know how matters stand in Canada, but I would advise you, while showing all possible kindness to the insane and mentally defective, not to allow them to indulge in the pastime of procreation, and give them clearly to understand that with them their breed must come to an end. Insanity and mental deficiency are largely questions of inheritance, and, unfortunately, owing to cross-breeding into impure stocks, there is a latent strain of insanity and other nervous affections in a great many families, so no matter how careful you are in your selection, it will take some generations before you eliminate this latent strain from the impure dominants, but the sooner you begin such a selective birth-rate and the elimination of the undesirables the sooner you will attain a more or less perfect race. With the insane, the imbecile, the idiot, the mentally defective, the criminal, the ordinary wastrel, the loafer, the professional pauper, the tramp, the footpad, the drunkard, and other mental and physical degenerates, prevention is certainly better than cure, but you will never succeed either in prevention or cure by maudlin sentimentality.

In England and Wales there has been a great reduction in the infantile mortality during the last ten years, due to the falling birth-rate, more favourable climatic conditions, and greater care of the infants, but there has been practically no reduction in the deaths from developmental and wasting diseases, which cause 61 per cent. of the total deaths during the first three months of life. It is, perhaps, best that this should be so, as the reduction in the birth-rate has been entirely among the better stocks, and if these 61 per cent. of defectives at birth survived, the only advantage that could possibly accrue would be in finding more work for the medical profession and more scope for the charitably disposed. Prevention in these cases implies breeding from better stocks.

Of recent years there has been a considerable increase in the death-rate from pneumonia, and this, no doubt, is partly due, as pointed out by the Registrar-General of England, to a more correct certification of deaths. Many of those formerly labelled bronchitis, especially among children, being now correctly designated pneumonia. But, whatever the cause of the apparent increase, there can be no doubt that the death-rate from this disease is somewhat fearful. In 1909 in England and Wales it caused more deaths than any other form of disease, with the single exception of all forms of tuberculosis. The deaths from it considerably exceeded those from phthisis; the numbers being per 1,000 deaths, pneumonia 89, phthisis 74.6; and the rate per 100,000 living, pneumonia 129,

phthisis 105. Yet we have a great outcry about the conquest of consumption, but not a word about the conquest of pneumonia. It would seem as if the ordinary individual was incapable of getting more than one idea into his head at the same time.

Pneumonia is an infective process, due to infective organisms, the pneumococcus in the vast majority of cases, though many other organisms play an important rôle in individual cases. The pneumococcus is very widely spread, even more so than the tubercle bacillus, and I feel confident a bacteriologist would find it in the mouth of almost every one of us. Therefore, it is as a rule a harmless saprophyte, but in a dirty mouth it may assume a virulent character, and when the resisting power of the individual is depressed from any cause, such as undue exposure, especially during sleep when the control of the nervous system is largely in abeyance, alcohol, nervous prostration, the pneumococcus readily finds its way into the lungs or blood and sets up pneumonia, or general pneumococcal infection. Pneumonia is a common disease at the extremes of life, and in the aged it is often a terminal disease—the old die as easily from pneumonia as from anything else. Like typhus fever it is a good racial disease, it kills the weaklings, and, as a rule, causes no permanent injury to the survivors. The mortality is greater among males than females, and therefore in the old countries it increases the disparity between the sexes. Unfortunately, it cuts off a large number of both sexes in the prime of life. The disease is short, and therefore inexpensive, so that no one makes much out of it except the undertakers, who grow fat on the misery of others. The case mortality is high, but yet no serious attempt has been made to curtail its incidence. The good lives cut short are soon forgotten. "The evil that men do lives after them; the good is oft interred with their bones." This disease is more prevalent in cities than in the country, and among those who lead unhealthy indoor lives rather than among those who work in the open.

Alcohol is a strong predisposing factor, a factor which not only increases the incidence of the disease, but also immeasurably lowers the resisting power of the individual, and so increases the mortality-rate. On the other hand, an excessive amount of lime salts in the blood greatly increases the resisting power of the individual, and so both lessens the incidence and the mortality. Any septic condition of the mouth increases the virulence of the organisms, and so a foul-mouthed individual is usually a greater danger to himself than to others. By way of prevention, the mouth should always be kept perfectly clean, and as aseptic as possible. The nasal passages and throat should be kept clean with some simple oily preparation, such as pure liquid paraffin, as they are frequently the paths of infection, not only for pneumonia, rheumatic fever, influenza, and diphtheria, but also for cerebro-spinal fever and poliomyelitis.

Sir Almroth Wright has introduced vaccines for the prevention and cure of many infectious diseases, and among the most valuable are the pneumococcal and influenzal vaccines, which, when judiciously used, are most valuable remedies in the prevention and treatment of these diseases. In apoplexy and hemiplegia the patient frequently succumbs to an attack of pneumonia, and this can be obviated by a proper vaccine. Operations on the mouth are frequently followed by a fatal septic pneumonia, and in such cases it is not sufficient to use antiseptic mouth washes, but previous to operation the pathogenic organisms in the mouth should be isolated, and a corresponding vaccine prepared. Anti-streptococcal serum administered before operation is also a valuable adjunct.

Another common cause of the high mortality from pneumonia arises from lack of proper early treatment—often owing to the fact that some medical men take two or three days to diagnose the disease, and then call it congestion of the lungs, and treat it cavalierly as a matter of no great importance for fear of frightening the patient, until the unfortunate individual is too ill to be frightened by anything. In my opinion, if pneumonia were early recognized and properly treated the mortality would be greatly lessened.

In Ireland in 1909 the death-rate from pneumonia was lower than in England, being 60 per 1,000 deaths, and 99 in every 100,000 of the population.

In Scotland they move very slowly, even in the way of recording their deaths, as

even now I have only been able to obtain the records of the eight principal towns for 1909. The death-rate from pneumonia was much higher than in England and Ireland, and this makes me wonder how much the national beverage had to do with the issue. The death-rate per 100,000 inhabitants was 177, varying from 217 in Glasgow to 92 in Perth; the rate per 1,000 deaths was 107, while that from phthisis was 77. In the Province of Ontario in 1907 the death-rate from this disease per 100,000 population was 138, and per 1,000 deaths, 91.

Bronchitis holds the second place as a cause of death in England and Wales, the numbers in 1909 per million persons living being 1,142, against 1,290 for pneumonia and 1,081 for phthisis. There has been a considerable diminution in the apparent incidence of the disease, partly owing to proper transference to the pneumonia list. Bronchitis is still very prevalent and fatal at the extremes of life, consequently the young and the old should be well protected against atmospheric changes. Some persons are much more susceptible to bronchial catarrh than others; this susceptibility is much lessened by a fair amount of lime salts in the blood, and increased by the salts of sodium and potassium, but in cases of true asthma the very reverse appertains. Alcohol and tobacco are injurious to the throat and bronchial mucous membrane; and the chronic cough thus induced is a frequent source of emphysema. A suitable vaccine is often highly beneficial in acute and chronic bronchitis, but there is no vaccine to counteract the effects of alcohol and tobacco. All destructive processes of the lung tissue cause emphysema. Senile emphysema is an atrophic process due to want of exercise of the lungs, associated with ossified costal cartilages; this can often be obviated by decalcifying agents and breathing exercises.

Pleurisy, again, is largely an infective but not a specific disease, as it may be associated with tubercle bacili, rheumatism, pneumococcus, pyogenic organisms, typhoid and colon bacilli, etc. In its prevention and treatment we must avoid undue exposure and all depressing influences, and consider the infective organisms.

Since 1870 there has been a marked fall in the death-rate from smallpox, typhus, and enteric fever. Every person can be protected against smallpox at a very small cost; sanitarians have practically abolished typhus fever, and the incidence of enteric fever is and has been steadily diminishing, but we have still got to deal with some of its associated causes. The ordinary household scavenger, the domestic fly, is still a troublesome pest, and the human carrier usually causes a good deal of mischief before discovery, and when discovered is difficult to control. The milk supply is still a frequent source of local epidemics, but the water supply is generally above reproach except in rural districts. A few epidemics have been traced to ice-cream vendors. The erroneous dread of sewer gas as a direct cause of the disease is now a matter of ancient history, except in the law courts, where it still does duty.

In the army Sir Almroth Wright has been fairly successful in lessening both the incidence and mortality of this disease by his vaccine, but in all campaigns thorough sterilization of the water is the most important method of prevention. Other matters must not be neglected, such as the disposal of the excreta and the protection of the food from infection by flies.

In diseases which largely affect children, such as measles, whooping-cough, diphtheria, and diarrhœa, the improvement has not been so marked, except in diarrhœa, in which, during the last few years, the incidence has fallen owing to favourable climatic influences. In scarlet fever, where isolation is pretty universally adopted there has been a great fall both in the incidence and mortality. Although there has been quite a revolution in the treatment of diphtheria and consequently in the case-fatality, I am afraid sanitarians have not done their share in lessening the incidence of the disease. It will be very difficult to prevent the spread of infectious diseases among children so long as we have overcrowding, defective ventilation, dust, and want of cleanliness in the homes, schools, and public conveyances. However, a great deal can be done for local conditions by looking after the children's teeth, by seeing that their teeth and jaws get plenty of exercise in chewing food, by keeping their mouths and nasal passages

as aseptic as possible, and by removing any obstructions, such as adenoids and large tonsils.

During the last forty years in England and Wales the number of deaths due to venereal diseases has fallen from 92.6 to 48 in the 1,000,000 population. So far as these statistics are reliable, they seem to me to point to a great improvement in the treatment, as there is no reason to believe that there has been any diminution in the incidence. These diseases, from their deteriorating effects on the race, merit the attention of a statesman. A determined effort should be made to stamp them out, notwithstanding the pharisaical hypocrisy of the unctuous and righteous, who compound for sins they are inclined to by damning those they have no mind to. The suffering caused to innocent wives and children by those diseases call aloud for their elimination. With a combined international effort they might be stamped out.

What can be done by well-directed legislative measures in stamping out disease is well exemplified by the muzzling order of Mr. Walter Long (to whom the country has never shown sufficient gratitude), as there has not been a case of hydrophobia in Great Britain or Ireland for the last fifteen years.

In England and Wales in 1909 there were 914,472 children born alive, and there were 1,429 mothers who died from septic diseases associated with parturition; there were also 3,171 women who died from diseases caused by or associated with pregnancy and child-bearing, but who had not produced viable children. The net result is that 1 woman died for every 199 children born alive. A large number of these women should never have been pregnant, and many died from preventable diseases which were not prevented. There is plenty of scope here for prevention, not only in advising women not to undertake risks which will prove their death-blow, but also by saving valuable mothers from septic infection. This can be easily accomplished by a little trouble before parturition in attending to the health of the mother, and if any pathogenic organisms are found in the *via naturalis* an appropriate vaccine should be administered previous to parturition. I know an ophthalmic surgeon who will not do a cataract operation until the conjunctival sac has been prepared and a bacteriologist pronounces it free from microbes. Why do gynaecologists not undertake somewhat similar precautions in the case of the parturient woman? The vaunted aseptic gynaecology of which we hear so much is not sufficient; there may be a breakdown in the technique, and, moreover, the germs may be there before the arrival of the asepsis.

The practical disappearance of erysipelas from hospital wards must largely account for the lessened death-rate from this disease. We must give the surgeons due credit for this diminution; in fact, I would like to give them the whole credit, as, so far as preventive medicine is concerned, very little can be placed to their credit. About the only diseases which they attempt to prevent are those which spoil their operations—erysipelas, pyaemia, and septicaemia. The surgeons largely live on the failures of the physicians and general practitioners, and I hope they will not take any umbrage at what I say here and in other parts of this address. They can, if they choose, put down my remarks to envy, jealousy, and all uncharitableness, but I shall not acknowledge any malice. I intensely admire their work and envy their fees, which are, like the falls of Niagara, magnificent.

In regard to rheumatic fever, there has been during the last forty years a marked fall in the death-rate, which appears to me to be more due to improved methods of treatment than to any lessened incidence of the disease. Although rheumatic fever is not very fatal, yet when we take into account that it is the chief cause of heart disease in the young, it must be looked upon as a terrible disease. Every child with rheumatic hereditary tendency should be well protected against wet and cold. Every affection of the nose and throat, and, in fact, the whole digestive tract, should receive immediate medical attention, as it is through these pathways that the rheumatic poison or organism is introduced. Immediately on the slightest appearance of this disease the milk and carbohydrates, which are apt to undergo acid fermentation, should be cut off, and red meat, which supplies ammonia to neutralize the sarcolactic acid in the

muscles, should be freely given. For flushing out the system there is nothing better than hot water, but the water should not contain much lime. In order to save the valves of the heart, the citrates of sodium and potassium should be freely administered. As specific treatment the salicylates still hold their sway, the vaccine treatment being still in its infancy. Parents who transmit a hereditary tendency to rheumatism to their offspring have a serious responsibility which they cannot honestly transfer to Providence, and therefore they should themselves exercise a provident care over their children. There is no necessity for coddling, but the children should be adapted, or rendered adaptive, to the environment; cold sponging every morning, sufficient to induce healthy reaction, has a good protective influence. Fresh air, exercise, sufficient clothing, moderate diet, especially in carbohydrates, and general attention to the digestive tract are all necessary.

Diseases of the blood vessels, heart, and kidneys are on the increase, no doubt largely due to greater wear and tear, more worry and anxiety in life. From these three diseases, including cerebral hemorrhage, the death-rate per million living in 1909 was: In England and Wales, 2,708.4; in Ireland, 3,170; and in the eight principal towns in Scotland, 3,234; in Ontario, in 1907, 2,172. If these deaths occurred among the wastrels, it would perhaps not matter much, but this mortality to a large extent occurs among the most hard-working and most energetic men and women in the prime of life, from 35 to 65 years of age. One often hears patients say that they have never been ill a day in their lives, when an examination of the heart, kidneys, and blood vessels shows disease of fifteen to twenty years' standing, and the tenure of life reduced to a few years at most, and yet many of these conditions were preventable. Of course, many a man may prefer to lead a very active and short, but to him enjoyable, life rather than drag it out to an inordinate length. It is only with healthy blood vessels that any one can hope to retain his mental and bodily vigour, and expect to attain to a green old age. I know that there is another view of life, and that many men do not consider old age desirable. When man has ceased to be a productive agent, intellectually or physically, they look upon him as a mere cumberer of the ground—an obstacle in the path of progress which should be removed.

Diseases of the heart, in the vast majority of cases, arise from causes acting on the periphery, and by preserving healthy blood vessels—an end very easily attained if people were content to be intelligently directed—one can prolong a healthy and vigorous existence for many years. I have delivered several addresses on arteriosclerosis and allied subjects dealing with the prolongation of life, but I cannot enter into these matters here, as they would require several hours for their exposition. However, I may say that the lime salts play a very important rôle in these diseases, and some excellent work on calcium metabolism and diseases of the blood vessels has been done in Montreal by Oskar Klotz, Professor Adami, and others.

With many authorities it is not the popular method to anticipate disease; they prefer to get hold of a case of heart block, cardiac arrhythmia, or angina pectoris, and then they can make something out of their cases in more senses than one. But I want to educate the public into the habit of taking an interest in their own health. We have here got a large field for preventive medicine, but it is very difficult for a practitioner to prevent disease when he is not consulted. To my mind it is very deplorable to find many of the ablest men of the day cut off in the prime of life and vigour of manhood from disorders of the circulation, which are much more easily prevented than some of the so-called preventable diseases. The distinguished man who coined the expression, "If preventable, why not prevented?" himself died of preventable disease.

In England and Wales the mortality from all forms of malignant disease has steadily risen since 1860 to 1909—in the male population from 210 to 826, and in the female population from 480 to 1,071 in the million living. In Ireland the earlier statistics were not very reliable, but in 1909 the death-rate to the million living was only, among males 750, and among females 850. In the eight principal towns of Scotland the rate for both sexes was

1,073, and therefore higher than either England or Ireland. In Ontario in 1907 the rate was 626. In England, where tuberculosis is steadily declining, cancer is just as rapidly increasing, and in Ireland both diseases are rather stationary, but the cancer death-rate is 9 per cent. lower among males and 11 per cent. among females than in England and Wales. So the higher tuberculosis death-rate in Ireland has its compensations. There have been in recent years great improvements in the surgical treatment of malignant diseases, and we are getting a little nearer the solution of the problem of their nature and prevention, but not quite so near as some would have us believe. Even now a great deal can be done towards their prevention. If all sources of constant irritation, internally and externally, were removed, the occurrence of these diseases would be frequently obviated. Metchnikoff says: "Stagnation is a familiar cause of disease, and is the probable cause of the frequency of cancer of the stomach." Its selective sites in the large bowel are those where there is stagnation and irritation. In cancer there is increased akalinity of the blood, with a diminution in the amount of free lime; the same condition may appertain in the tissues, but not, as a rule, in the same degree, as the lime taken up by the blood from the intestinal mucosa may be partly discharged into the tissues in the process of elimination. Recently Professor Benjamin Moore and his coadjutors have shown that the deficiency of free HCl in the stomach occurs no matter where the cancer is situated.

Myositis ossificans traumatica is a comparatively rare affection, and I should scarcely have considered it worthy of attention here only for two papers in a recent issue of the *Lancet* by two eminent London surgeons. These gentlemen have a good many conjectures as to the nature and causes of this affection, and, largely on the strength of skiagrams, these calcareous masses are spoken of as "bony," and microscopically said to be of the nature of cancellous tissue. They have not a single word about the amount of lime salts in the blood; and surely in the present day there is no justification for ignorance on this subject. When there is an excess of lime in the blood there is more mystery about its deposition in an injured muscle than there is in a damaged artery. As in the artery, so in the muscle, the lime is deposited in the form of a calcium soap, and afterwards the fatty acid is replaced by carbonic and phosphoric acids; we then get a hard calcareaus plate. These masses often disappear spontaneously when the calcium content of the blood falls. The proper preventive and curative treatment is to see that there is no excessive amount of lime in the blood by regulating the diet, and the use of decalcifying agents. Massage and exercise of the injured part prevent the deposit, and hasten the elimination of lime from that region. It is less difficult to hasten the absorption of lime deposited in a muscle than to get rid of that in rigid costal cartilages, yet the latter feat can be accomplished with a little patience and trouble.

The failures of physicians and practitioners in the prevention and treatment of diseases of the digestive tract have provided a rich harvest for the surgeons, who, buoyed up with their successes, would now like to appropriate the whole region to themselves. I would advise them to make hay while the sun shines, for fear that the millennium should arrive sooner than they expect. Already the dawn of a new era is breaking forth, and under prevention there will not be much necessity for surgical interference.

I need not say anything about septic diseases of the mouth, which are well recognized by our profession, but unfortunately the public do not often recognize their danger, otherwise we should not see so many cases of pernicious anaemia.

A comparatively simple affection which occasionally occurs during the first few weeks of extrauterine life has been dubbed with the high-sounding title of congenital hypertrophic stenosis of the pylorus. There have been a great many learned disquisitions as to its nature and treatment by physicians and surgeons attached to children's hospitals, and now they are busily engaged trying to settle the question as to whether the treatment should be medical or surgical. This would be very amusing were it not for the fearful mortality which accompanies the efforts of both. The explanation is too simple to have attracted the attention of those gen-

demen, and the explanation is simply that it is not congenital, but is due to an excessive amount of calcium in the stomach walls, and especially in that portion of the walls—the pylorus—which contains relatively the most muscular fibres.

If it were more generally recognized that even a minute trace of a soluble calcium salt produces a marked physiological effect on involuntary muscular fibre, not only would pyloric spasm, but a good many enterospasms, be more readily explained. No doubt a growing infant requires a good deal of lime, but even it can have too much of a good thing, and when a series of overdoses are concentrated in a particular organ the result is not what could be desired. The amount of lime in human milk varies considerably, and is apt to be greatest in the early period of lactation; moreover, the mother may be unnecessarily fortifying this secretion by herself drinking large quantities of milk and taking other articles of diet containing lime. In an unpublished thesis G. Claude Scott has shown that cow's milk contains five to six times as much lime as human, but in cow's milk, of the total lime, 72 per cent. is combined with the protein and 28 per cent. free, while in human milk only 44 per cent. is combined and 56 per cent. free. Moreover, the combined calcium in human milk is much less stable than in cow's milk. In such cases, when the infant is being fed on cow's milk, the milk should be stopped for a time, or at least it should be well diluted, citrated, and boiled some time before using. It is even better to add to the diluted milk a small amount of the citrate and about double the quantity of the bicarbonate of sodium, a mixture which not only splits off some of the fixed lime, but renders the free lime more insoluble. The value of the mixture is further enhanced by the addition of a minute quantity of an active potassium salt, such as the chloride, which hastens the relaxation of unstriped muscular fibre. The milk should always be boiled. When the infant is being fed at the breast we must get rid of the excess of lime by decalcifying the mother. This can be readily accomplished by cutting off for a necessary time all articles of diet containing lime, and by giving her a liberal allowance of such drugs as citrate and phosphate of sodium, lemon squash, etc. A teaspoonful of olive oil to the infant will have a more soothing effect on its stomach than a surgical operation. An opiate is often necessary to relax the spasm of the pylorus. Perhaps these cases would be much more common than they are only for the fact that infants vomit very readily without much apparent cause.

Gastric ulcer frequently occurs in young women after the establishment of the menstrual function; they become anæmic, suffer from constipation, and there is not only a deficiency of iron, but also of lime in their blood. By the way of prevention, the calcium and magnesium salts are highly beneficial.

You do not often find a surgeon foolish enough to contract the fashionable disease, appendicitis. I believe in the United States you are not considered respectable if you have not had it. Personally, I have never qualified for that mark of respectability, and I do not intend to do so. I am of opinion that if people were not so fond of keeping a cesspool in their interior the *Bacillus coli* and other organisms would not become virulent, and appendicitis would be a comparatively rare disease. A lady of a religious turn of mind once told me that she quite agreed with me on this point, "as man is a veritable sink of iniquity." A *Bacillus coli* vaccine is often useful in treatment.

I know a physician who considers himself a great authority on mucous colitis, and who freely prescribes milk; he might as well prescribe sandpaper. In these cases the insoluble lime soaps, especially those of stearin and palmitin, are very irritating to the large bowel. In such cases the blood often becomes deficient in lime because it is being rapidly excreted by the bowel. However, all insoluble lime preparations must be strictly avoided, also saturated fats, such as beef and mutton fats. Unsaturated fats, such as olive oil, cod-liver oil, butter, cream, and bacon gravy, can be freely used. Whatever lime is given must be administered in a very soluble form, such as the iodide or the glycerophosphate. In obstinate cases an examination of the flora of the intestine, and the administration of a suitable vaccine will prove useful. This disease is fairly amenable to judicious treatment,

even without the assistance of the surgeon, and it is one which can be prevented. Some years ago there appeared in the *Lancet* a paper entitled "The Cause of Colitis, with Special Reference to its Surgical Treatment." This is the surgical and business way of looking at the subject. A less astute individual might have studied causation with a view to its removal and the prevention of disease. However, in the present day the public only pay for treatment, and have no right to any choice.

It should be worthy of the attention of surgeons and general practitioners to try and find out the cause of enlargement of the prostate gland, which not infrequently renders the lives of old men miserable. The surgeon may say, Remove it; but I would say, Find out and remove the cause, so that the necessity for the removal of the gland may disappear. This affection is not much in my line of work, but recently it has appeared to me to be at least associated with an excessive amount of lime in the blood and tissues. This is probably not the sole cause; there is likely some local irritation or some interference with functional involution; but I feel fairly confident that an excessive amount of calcium is an associated condition—a condition which has sufficient determining effect in stimulating hyperplasia to merit its removal. I have noticed the occurrence of this affection in men who have led exemplary lives, who have not considered wine the milk for old age, but who have preferred that from the cow. In these men I have found an over-supply of lime with deficient calcium metabolism, rigid costal cartilages, and calcareous deposits in the arteries.

The presence of lime is necessary in most glands of the body for the proper exercise of their respective functions, but when such glands as the female breast and the prostate in the male should cease to functionate and take on a process of involution it is not unreasonable to suppose that an excessive, and then unnecessary, amount of lime, especially when the blood is very alkaline, may play some part in the adenomatous growth or inflammatory hyperplasia which then occasionally takes place. Chronic mastitis, perhaps, most frequently occurs in single women, the function of whose breasts has only been potential, but it is not the lime which is excreted either in milk or in the prostatic fluid that can work any mischief; in fact, the excretion of lime into the tissue of a diseased gland may serve as a cure. Moreover, the exercise of the function of the prostate is often protracted and its involution delayed. I have seen a large prostate and lively spermatozoa in a man over 80. If these suppositions be found correct, then the lines of prevention become more obvious.

Before concluding, I should like to say a few words on the last phase of life, old age. In 1909 the number of persons dying from old age per million persons living was in England and Wales 948, in the eight chief towns of Scotland 411, and in Ireland 2,029. In the latter country there were 192 males and 231 females who died at the age of 95 years and upwards. This does not speak badly for Irish longevity notwithstanding tuberculosis. In the whole of Canada in 1901 the rate was 1,115, and in Ontario in 1907 it was 1,180. This is better than Great Britain, but not much more than half the rate in Ireland.

I am not going to tell you how to prevent old age, most people are fairly successful on that score. I only propose to do a little soliloquizing—I do not know that I have ever met anyone who really considered himself old. I once knew a physician of about 80 who was called in to see a professional brother about 20 years younger. At the consultation the old physician said about his younger colleague and patient, "After all, you know, he is getting an old man." Age is a very relative term, like heat and cold, and its importance somewhat depends on how the popular breeze is blowing. We do not exactly know in the present day what to do with our old people. We have not put Metchnikoff's idea as to their employment into practice, neither have we established Professor Osler's lethal chamber. There are some people who live too long for their reputation's sake. As I said on a previous occasion, a man cut off in his prime may be handed down to posterity as an intellectual giant, whereas if he had existed till his cerebral arteries became sclerosed, and he had become slow of thought and speech, or tended towards drivelling dementia, much of his former

glory would have waned, and the memory of him would pass quickly into oblivion.

I am not now so much concerned with the prolongation of life as with the preservation of health—a sound mind in a sound body, the former can barely exist without the latter. We are not concerned with any useless attainment of longevity, but with the prolongation and efficiency of life. We are concerned with the efficiency and manhood of the nation. When a life ceases to be efficient it can retire into obscurity, or be withdrawn from circulation, and receive an old age pension. Paul Bert said about the aged: "They deserve congratulations, care, and consideration, but the prolongation of their lives does not demand any special solicitude from society." Paul Bert died comparatively young, perhaps if he had lived longer he would have modified his opinion. Since then we have humanely, and I think wisely, become more solicitous for the well-being of everyone.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay."

Whatsoever thine hand findeth to do, do it with thy might; for there is no work, nor device, nor knowledge, nor wisdom, in the grave, whither thou goest.

Editorial

The Final Report of the Royal Commission on Tuberculosis.

The British Royal Commission on Tuberculosis has now issued its final report. Ten years ago, in August, 1901, this Commission was called together at the initiative of Mr. Walter Long, the then President of the Local Government Board, and as a result of Dr. Robert Koch's pronouncement, at the International Congress on Tuberculosis of the preceding year, against the transmissibility of Bovine Tuberculosis to human beings.

Three problems were placed before the Commission for solution: First—Is Tuberculosis in man and animals one and the same disease? Second—Could man contract Tuberculosis from animals and vice versa? And, third—Under what conditions, if at all, the transmission of the disease from animals to man takes place; and what are the circumstances, favorable or unfavorable, of such transmission? And the Commission's findings are that in many cases human Tuberculosis is identical with the Bovine disease, and that Tuberculosis may be communicated to man by infected cow's milk and by tubercular meat.

In order to arrive at these conclusions farms and laboratories were equipped at Stanstead, in Essex, and placed under the control of resident investigators, working, of course, under the direct supervision of the Commissioners, although a few independent investigations were taken into consideration.

During the past ten years the Commission issued four reports, including the present report. In the first report published by the Commission three years after its inception, summing up the results of preliminary investigations, it was shown that the germ found in certain cases of Tuberculosis produced in cattle a disease which could not be distinguished from the Bovine type. Three years later the second interim report was published, which went to confirm the view that Bovine Tuberculosis was dangerous and the possible source of infection in man. This is the report that the late Professor Koch took exception to at the Washington Congress on Tuberculosis in 1908. The third interim report published two years ago dealt with certain conditions of Tuberculous cows which rendered milk infectious to human beings, and the final report now under notice contains the results of the entire inquiry into Tuberculosis and definitely states that this disease can be transmitted from animals to man. The whole of Dr. Koch's theory is thus upset, and after much disputation we are back at the standpoint of 20 years ago.

It is interesting to note the striking differences in the results pointed out by the Commissioners among calves of about the same age and weight which were experimented upon. Bacilli derived in some cases from bovine sources and in some cases from human sources were injected into different calves and yet, while some calves succumbed and died of general progressive tuberculosis, others apparently remained in good health and showed on examination only a very retrogressive infection. The Commissioners therefore recognized the fact of inherent conditions in the susceptibilities of different individuals and were led to the conclusion that in the case of the calves described, while the pathogenic bacilli injected were the same, the powers of resistance of the calves were different. This important point demonstrates that external conditions are not everything and that a great deal in the preservation of health depends upon the inate power of resistance of the individual.

Without hesitation, the Commissioners report: "First, that man must be added to the list of those notably suspectible to tubercle bacilli; second, that mammals and man can be reciprocally infected with the disease; third, that the disease may be communicated from different mammals to man from infected cows' milk, it having been clearly shown that a large portion of the tuberculosis of childhood is due to infection from this source and from tubercular meat."

In regard to preventive measures the Commission suggests that "in the interests of infants and children and members of the population whom we have proved to be specially endangered, and for the reasonable safeguarding of the public health generally we would urge that existing regulations and supervision of milk production and meat preparation be not relaxed; that, on the contrary, the Government should cause to be enforced, throughout the kingdom, food regulations planned to afford better security against the infection of human beings from the medium of articles of diet derived from tuberculous animals. More particularly," say the Commissioners, "we would urge action in this sense in order to avert or minimize the present danger arising from the consumption of infected milk."

The Commissioners are convinced that measures for securing the prevention of living tubercle bacilli in milk would greatly reduce the number of cases of tuberculosis of the abdomen and glands of the neck in children, and "that such measures include the exclusion from the food supply of the milk of the recognisable tuberculous cow, irrespective of the site of the disease."

The final report of the Royal Commission on Tuberculosis is dated June, 1911, and is signed by all five Commissioners, namely, Sir William Henry Power, F.R.S., Dr. G. Simms Woodhead (Chairman in succession to the late Sir Michael Foster), Dr. Sydney Martin, F.R.S., Sir John McFadyean, and the late Sir R. W. Boyce, F.R.S., although the last named has died before its ultimate publication.

Inter Alia.

The dispensary plan should be kept well in the public view in the crusade against consumption. The disposition is now to combat disease more by preventive than by curative measures, though both these must to a certain extent be interoperative and the essential preventive measures in combating consumption is undoubtedly the dispensary system.

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One idea in regard to interoperation is to map out the country or selected areas of it as the battlefield is mapped out for the purpose of medical aid. There are the seekers for the wounded, the field hospitals, the base hospitals, and finally the permanent hospitals.

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In applying the military idea to the organization against consumption, those who are attached to the dispensaries represent those sections of the army medical corps who work on the battlefield. It is explained that in addition to treating individual patients suffering from consumption as out patients, the members of the staffs of the different dispensaries follow the consumptive to his home. The dispensary doctors and nurses attend these homes to investigate the conditions under which the patients live. They endeavor to correct these conditions should they be found to facilitate the propogation of the germs of tuberculosis. Thus the dispensary officials will, in course of time, be aided in their work by the heads of households. In the dispensary system with which ought to be allied the more drastic enforcing of the housing laws and the laws of sanitation generally, there would be an informal system of notification.

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One of the objects of the dispensary system is to assist in the creation of healthy homes both by advice and precept and to protect as far as possible the healthy from disease, the line of advance behind the dispensary system being the officers who regulate the more suitable patients to the sanatoria and farm colonies, just as the wounded soldier is sent back from the field hospital to the base hospital and finally to the permanent hospital should the case prove incurable.

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The dispensary system has been tried in various countries, and it has been found to answer expectations more readily than the resort to purely curative treatment provided at the sanatoria which do not strike at the roots of the evil, but endeavor to arrest it after more or less definite manifestation.

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The interest of life insurance companies in the sanitary condition of cities is apparently increasing. And there is abundant reason why it should, for the better the health conditions the longer the lives of the policy-holders are likely to be

and the greater the number of premiums paid. At a recent meeting of the presidents of the life insurance companies, this matter was seriously discussed and by one of the speakers a suggestion of a most practical sort was made. It was that in every city of 50,000 population or more branches or sub-organizations of the Public Health Associations composed of influential men be effected for the purpose of promoting the sanitary welfare of the places. He expressed the belief that, if in every such city the managers, agents, medical examiners and legal representatives of the various companies, health officials, and a few other men interested in such matters were brought together in a permanent organization for this purpose, millions of dollars would be saved to the life insurance policyholders of the country.

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Such a body could, of course, have no official standing, but it could do a great work in advocating projects for the protection and preservation of the health of cities. As long as the propaganda was sane nobody could have any objection to it, for the return for the money spent would make for the good of all. Perhaps it would even be possible to vary the rates, giving to the cities with the best sanitary precautions a lower rate than to others. If that could be done every policy-holder, present or prospective, would be added to the health-promoting committee.

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While the oiling of roads is good from a motorist's point of view, it is doubly good from a sanitary point of view. It is not healthy to live even in the open country and have the front yard clouded with dust the greater part of the day, and it is not healthy to have the rooms of a house located close to the road filled with dust every time a vehicle goes by. Oiling the roads is sanitary and it is economical —it is economical to the resident along the road, and also to the party in the car, and best of all, it is more healthy to both parties.

Library and Laboratory

The Reduction of Domestic Mosquitoes.

This is an excellently written hand book, containing the history of, and instructions for, the destruction of the domestic mosquito. The writer, Dr. Edward Halford Ross, of the Liverpool School of Tropical Medicine, applied the rules contained in this book during his regime as health officer of the Port Said and Suez Canal districts; the book being written at the suggestion of Professor Donald Ross.

Dr. Ross points out that towns of the Suez Canal were cleared effectively of all kinds of mosquitoes and that the results gained at Port Said show the fallacy of limiting the mosquito reduction campaign only to malaria-conveying anophelines.

Dr. Ross describes the different species of mosquito and then deals with the domestic mosquito in a very interesting way.

He tells how in 1878 Vankroft and Cobbold suggested that the human blood worm *Filaria bancrofti* might be carried by mosquitoes, and how Manson in China came to the same conclusion; Donald Ross in 1897 also showing that the human malaria parasite of Laveran is similarly transmitted by certain mosquitoes of the dapple wing type. These conclusions were confirmed by Koch, Daniels, Bignami, Bastianelli, Stevens, Christophers, and many others, and serious attention was consequently drawn to the mosquito as a dangerous pest.

The discovery of the transmission of malaria by mosquitoes was rapidly followed by the discovery of the transmission of yellow fever in a similar manner.

The first suggestion as to the best way to extirpate mosquito-born diseases was made in a letter to the Government of India in 1899. The suggestion was published in the Indian Medical Gazette, and a few months later Professor Ross made similar proposals for Sierra Leon. As a result, a limited campaign against anophelines was begun at Hong Kong in 1900, followed in 1901 by the reduction of mosquitoes in Staten Island, near New York, and the same year the first extensive campaign was started in Havana against all kinds of mosquitoes. This latter campaign was most successful and yellow fever was completely abolished.

"The existence of domestic mosquitoes," writes Dr. Ross, "in a town or village should be regarded as a sign of insanitation, and their numbers as a measure of that insanitation." The reduction of the domestic species of mosquito presents no difficulties. Given the necessary means, it requires only organization and perseverance, and Dr. Ross shows that mosquito prevention in towns has certain definite results if properly carried out; namely, first, it prevents certain diseases; second, it is a popular measure; third, it necessitates a regular weekly examination of houses, yards, latrines, ash pits, water closets, cess pools, and all unsanitary places by the sanitary authority—if the public believes that this examination is being carried on in order to prevent mosquitoes there will be no opposition—; fourth, it interests the inhabitants and encourages them to report sickness and the return of mosquitoes to the local authority.

The cost of such a campaign is not great; an average municipal rate of 6d. per head of population per year in each town generally covers the cost of up-keep of a mosquito campaign and the sanitary inspection that follows therefrom; and this cost will gradually diminish as it did at Port Said under the management of Dr. Ross.

Dr. Ross deals with his subject in twelve chapters, taking up in order: The Importance of Domestic Mosquitoes; The Life and Habits of Domestic Mosquitoes; The Fever Census; Estimating the Cost of Mosquito Reduction; Ways and Means; Preliminaries; The Starting of the Mosquito Campaign; Progress; Mosquito Reduction; Reporting Progress; Finance; Results. His 114 pages are interspersed with 111 well-chosen illustrations, and the book is certainly one which should be read by everyone interested in public health

work—*The Reduction of Domestic Mosquitoes. Instructions of the use of Municipalities, Town Councils, Health Officers, Sanitary Inspectors and Residents in Warm Climates. By Edward Halford Ross, M.R.C.S., England; L.R.C.P., London; Liverpool School of Tropical Medicine; late health officer, Port Said and Suez Canal district; author of "The Prevention of Fever on the Suez Canal. 114 pages; 111 illustrations. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut St., 1911. $1.75 net.*

A Practical Guide to the Preparation of Town Planning Schemes.

In this very useful book it is pointed out that the general objects of town planning schemes are to secure proper sanitary conditions, amenity and convenience in connection with the laying out and use of land for building purposes and of any neighboring lands. The work is based upon the British Housing, Town Planning, etc., Act of 1909, written by a lawyer and an architect; and thus is produced a book peculiarly appropriate—the point of view of the two professions being so entirely different and still so essential to the preparation of town planning schemes that each author contributes much that the other could hardly be expected to have known.

Raymond Unwin writes the foreword and therein aptly points out that, while "Town Planning" has a prosaic sound, the words stand for a movement which has perhaps a more direct bearing on the life and happiness of great masses of people than any other single movement of our time. To put it shortly, "Town Planning" represents the attempt of the community to control town development, with a view to providing health, convenience and beauty. In the majority of instances towns have hitherto grown in such a haphazard manner that the banks of their canals and margins of their railway sidings are crowded with rows of cottages, while the materials of their industry for want of immediate access to these very canals and sidings have to be carted long distances at great expense and often with resulting congestion of traffic. Town planning, therefore, means the reservation for industrial uses of the areas most valuable for the purpose by reason of having immediate access to rail, road or water conveniences; the arranging for the most convenient communication by road or railway between these industrial regions, and the most healthy and attractive areas; and it must provide the most convenient mode of access possible between both these areas and the great centres of exchange of wholesale and retail business. All of which would enormously add to the efficiency of the population, facilitating their industrial activities and rendering their dwellings more healthful and attractive.

The book is accompanied by a model set of colored plans and useful appendices, included in which is a recital of the contents of the British Housing, Town Planning, Etc., Act of 1909.—*A Practical Guide in the Preparation of Town Planning Schemes. With appendices containing the text of the Act; Procedure Regulations; Extracts from the Hampstead Garden Suburb Act, 1906; Extracts from the Liverpool Corporation Streets and Buildings Act, 1909, etc.; also specimen forms of notices and advertisements, and a model set of coloured plans prepared in accordance with the regulations. By E. G. Bentley, L.L.B., and S. Pointon Taylor, A.R.I.B.A. (members of the National Housing Council), with the foreword by Raymond Unwin. 159 pages. London: George Philip and Co., Ltd., 32 Fleet St., E.C., 1911. 5s. net.*

Reference and Guide Book, The Trent Canal.

We have read with pleasure this excellent book, which is accompanied by maps covering the district between Hastings, on the Trent River, and the town of Orillia, on Lake Couchouching. The author, Mr. E. S. Clarry, of Peterborough, is to be congratulated upon the result of his work.

This district, known as the Kawartha district, has not been so long open to the health seeker and tourist for summer resort purposes as many of the other parts of Canada. But Mr. Clarry has pointed out that the present increasing popularity, of the various lakes and rivers included in the Trent Valley Canal, as a tourist and summer resort has lately added greatly to the number of private yachts, and with

the increased number of which has come an increased demand for charts of the navigable channel and other information regarding the channel generally. This he supplies.

The book is well illustrated and divided into sections, namely: Made the First Trip; The First Survey; Started by Imperial Government; A Toronto View in 1887; The Present State of the Canal; The Ontario Rice Lake Division; As to the Future; As to Power Development; As a Tourist Resort; The Hydraulic Lift Locks; The Reservoir Waters; 188,465 Acres of Water; The Charts Explained; Height of Locks; The Cost of Construction; Some Distances; Orillia; The Town of Barrie; Fenelon Falls, Ontario; The Electric City—Peterborough; Trenton; Electric Motor Power for Eastern and Central Ontario.—*Reference and Guide Book, The Trent Canal, by E. S. Clarry. Peterborough Examiner, Publishers, Peterborough, Ontario. 1911 Edition.*

The McGill Diploma of Public Health.

We have received the McGill University Annual Calendar, Faculty of Medicine and Department of Dentistry for the 80th session, 1911-1912, and herewith reproduce from pages 97, 98, and 99 the description of the special courses in Hygiene, etc., leading to the Diploma of Public Health.

In the session 1899-1900 the Faculty instituted a post-graduate course in Public Health and Sanitary Service, and since that time other courses as described below have been instituted.

Special instruction is given in this department, leading to the Diploma of Public Health; also for engineers, architects and those wishing to include this subject in their final examination for the degree of Doctor of Philosophy (Ph.D.).

(1) Diploma Course in Public Health.

A candidate undertaking this course must have possessed a degree in medicine or other qualification for practice, for at least twelve months before he is competent to receive the diploma. The courses prescribed are as follows:—

1. A course of lectures in public health (to be omitted in the case of candidates who have attended such a course before graduation).

2. A three months' course in bacteriology, special attention being directed to the pathogenic organisms and parasites—such course to be omitted on presentation of proof that it has previously been taken.

3. A six months' course of practical study of outdoor work under a medical officer of health (to be omitted in the case of Medical health officers holding appointments prior to the establishment of this diploma course).

4. Three months' attendance and clinical instruction at a hospital for infectious diseases (unless such course has already been taken prior to graduation).

5. Three months' instruction in sanitary chemistry and physics, with practical work in a chemical laboratory.

The examination for the diploma shall cover the following subjects: the drawing up of clinical outlines for annual and other reports of officers of health; a report upon the sanitary condition of some actual locality; the chemical analysis of liquids and gases and of specimens of food; demonstration of the consideration and use of meteorological, hygienic and sanitary apparatus; microspical examination of specimens submitted; description of specimens of human and other diseased tissues; practical examination in the employment of the usual bacteriological examination methods; the inspection of carcasses of animals to be used for food.

The above examination shall be written, oral and practical, and shall extend over a period of four or five days.

The following is a list of subjects included in the curriculum of study:—

(a) Sanitary Chemistry:—Examination of air, gases, water, the action of water on metals, milk, food and beverages; detection of poisons in articles of dress and of decoration; the chemistry of sewage.

(b) Sanitary Physics:—Principles of statics, pneumatics, hydraulics, light and photometry, heat and thermometry, the principles of hygrometry (only in their application to hygiene).

(c) Sanitary Legislation:—Statutes and by-laws relatin to public health; the powers of public sanitary authorities.

(d) Bacteriology and Parasitology:—Modes of propogation of disease and transmission of disease between man and man and man and animals; bacteriological

analysis in relation to public health matters; natural history of microbes and animal parasites.

(e) Vital Statistics—Calculation and tabulation of returns of births, marriages, deaths, and diseases.

(f) Meteorology and Climatology, including the geographical and topographical distribution of disease.

(g) Preventive Medicine and Practical Sanitation.

The fee for the diploma shall be $50.00.

Progress in Child Hygiene.

The *101st bulletin of the Department of Child Hygiene of the Russell Sage foundation*, issued recently, consists of the first comprehensive report of what American school systems are doing for the health of children. The report covers conditions in 1,038 cities, or nearly 90 per cent. of the important American municipalities. It traces the development of medical inspection of schools from its inception in Boston sixteen years ago and gives details as to the army of school physicians, nurses and dentists now employed to safeguard the health of American school children.

An examination of the report reveals the immense progress that has been made in the last decade. Ten years ago the number of American cities having systems of medical inspection was eleven; at the present time it is 443. The first school physicians were employed in Boston in 1894. Now there is an army of nearly 1,500 of them. The first school nurses were employed by New York nine years ago. Now they number between 400 and 500 and are employed by eighty cities. Sixty-nine cities are regularly employing dentists to care for the teeth of their children.

Marked differences are found between different states with respect to progress made in providing for medical inspection. Massachusetts and New Jersey stand easily at the head of the list, with universal compulsory school medical inspection, while in Vermont, Mississippi, Montana and Idaho the municipalities have not even begun work.

The greatest progress has been made in the north far west, the North Atlantic and western states easily outranking those in the South Atlantic, south central and north central groups.

A large portion of the report is given over to the hygiene of the school-room and data are given for the 1,038 cities, telling about the use of such modern innovations as individual drinking cups, sanitary fountains, vacuum cleaners and adjustable desks. The number of cities supplying individual drinking cups is nearly 300, while those having schools equipped with sanitary fountains number almost 800. The figures show that the deadly feather duster is being rapidly banished. More than 60 per cent. of the cities use moist cloths for dusting purposes and nearly 800 use dust-absorbing compounds for sweeping. Eighty-nine cities are cleaning their school-rooms by means of vacuum cleaners.

Contrasted with these evidences of progress are figures showing that fifty-one cities report that their school-room floors are never washed, and seven that the washing of school-room windows is entirely neglected.

In almost 1,000 cities instruction is given in the effects of alcohol and tobacco; 649 have special courses devoted to the prevention and cure of tuberculosis, and 592 give lessons in first aid to the injured.

The tables of the report are so arranged as to give all of the different sorts of information by state divisions, by individual states, and finally for each separate city of the entire 1,038.

A Cholera-Carrier — Diseases of Childhood.

Some time ago, writes J. L. De Wolfe, M.D., West Pespebiac, Quebec, in *The Medical Council*, the curious case of "Typhoid Jane," reported in the press, came to my notice. This woman was a carrier and perennial producer of typhoid germs, and therefore, a grave menace to the public, if left at large. Lately, from a Montreal newspaper, I gathered the information that there was a human cholera-carrier at Grosse Isle, the Government Quarantine Station of the River St. Lawrence. Forthwith, I wrote to the medical superintendent of the station for confirmation or denial of the newspaper report. His answer, when received, confirmed the press account.

It will be remembered that last year there was an epidemic outbreak of cholera in Russia. In November last a Russian

named Gottlieb Ziebe was taken off one of the boats running to Montreal and placed in quarantine at Grosse Isle as a cholera suspect. The reason for the suspicion has not been given me. Probably his arrival from an infected district, or the peculiar condition of his stools, aroused suspicion. The medical superintendent, writing on March 23rd last, states that "the patient is physically in good health, having no symptoms whatever, but carries, however, germs of cholera." He further adds that "repeated bacteriological examinations have given positive results as to the presence of the cholera germ."

Four months and more have passed, under rigid supervision, since the danger-carrying condition of this Russian was discovered. It would appear that it is permanent, and that the man is doomed to perpetual isolation, far from kin and country. This case is interesting, but it is none the less full of menace and food for serious thought. Germ-carriers are probably few and far between, still it is possible that they are not so rare as one would imagine. A germ-carrier might exist in our midst for years and not infect others, if the opportunity and conditions for infection did not present themselves. Cases of "walking typhoid" show peculiar features, and are, in a way, related to those of the germ-carrier.

Who can say, positively, that the headache and malaria of "walking typhoid" may not cease and the disease develop no further? Who can say that the germs becoming immune in their own human habitation, may not remain, and become a source of danger to the habitations of others unimmune to attack? It is not possible; in fact, is it not in evidence, that, after recovery from a germ-caused disease, the patient may carry for an indefinite time potent germs for outside evil-doing, although these same germs are powerless for further ill-effect to the patient himself? Have we never faced mysterious outbreaks of infectious maladies whose origin was obscure or unaccountable?

Related to the foregoing words is the subject of the ever-occurring infectious and contagious diseases of childhood. Year after year our children suffer from measles, scarlatina, mumps, whooping-cough, diphtheria (the last not strictly a child's disease, still its most frequent victim). Why? Where is the starting point? In town and country, by lake-side, sea and river, through hill and dale, year by year our children develop one or more of these diseases. Why? Neither climate nor changes of climate can cause scarlatina, measles, etc. A country village, with its sparse population breathing pure air, escapes not the swinging cycle of children's diseases any more than the town, with its crowded alleys. Death gathers its helpless little victims each year from every town and village. We give our dear ones to the Destroyer and hypocritically and falsely acclaim—"God's will be done!" It's the Devil's will that has been done, through our passive co-operation, through our unintelligent criminal inactivity.

In all communities of people there should be an efficient sanitary officer, vested with absolute authority for the control and prevention of disease. It (the authority) should be a one-man power. He should be free from interference by municipal lay governance. His work should be judged and inspected, when necessary, by a chief county sanitary inspector, whose sole work should be to supervise the labors of his sub-officers. These community sanitary officers should devote their whole time to the control and prevention of disease, and not engage in the ordinary practice of their profession.

If the conditions briefly sketched above were inaugurated the infectious diseases of childhood, with their annual tale of sickness and ever-recurring toll of death, would become a thing of the past.

Open Mail

To the Editor of The Public Health Journal, State Medicine and Sanitary Review:

Should Doctors Dispense?

Sir:—Should doctors dispense? Have they not enough to do, in examining patients, finding out what is the matter with them, telling them what to do, and writing a prescription, without the additional work of measuring out drugs, putting them into a bottle, filling up with water, writing the label, and sticking it on? The answer, surely, is "Yes."

Dispensing is not, strictly speaking, doctor's work at all. It is work which should be done by a druggist, who has been specially trained for it. In Scotland dispensing is almost invariably done by druggists; and this is also the custom in certain favoured towns in England. Unfortunately, however, in most parts of this country and the United States people have got into the way of expecting a bottle of medicine from the man who looks at their tongues and feels their pulses; and they would feel that they had not received their money's worth if he gave them no more than some advice and a written prescription. This is a pity, for it has brought about certain evils. It has caused people to regard the bottle of medicine as the most important thing they get from the doctor; and it has caused the druggists to go in for prescribing on their own account. Both these things are bad for the patient.

As a rule the last thing a patient needs is medicine. Very often he is living in unhealthy conditions, or eating and drinking in the wrong way, or doing work for which he is not fitted. What he needs is advice as regards his method of living—not drugs. If he is really ill—and most people who consult a doctor are out of sorts rather than really ill—he usually needs rest in bed, freedom from anxiety, proper food, and plenty of fresh air. Only when these things have been provided does the question of medicine come in. Yet, under present conditions, what the patient gets, more often than not, is very scrappy advice, and a bottle of medicine, with, perhaps, a box of pills thrown in. In most cases he takes the medicine, in which he has faith, and ignores the advice, which he regards as of no value.

The bottle of medicine, *supplied by the doctor*, probably is responsible for more inefficient doctor-work than anything else at all; and there is more inefficient doctor-work than most of us imagine. If only people could be got to see it, a thorough examination, an accurate diagnosis, and sound advice are things worth paying for, without any bottle of medicine; and if they would pay the doctor for these things, and get the medicine from the druggist, they would be much better served.

Doctors often may be heard to complain of the "prescribing druggist." They say that druggists should not be allowed to do work which properly belongs to the doctors. They forget that the doctors are doing work which properly belongs to the druggists. What the druggists say is, "As long as you doctors dispense, we shall prescribe"; and they do, to an enormous extent.

Now, while it must be obvious to everyone who thinks about it for a minute that the prescribing druggist is something of a danger to the community, it must not be forgotten that there is a great deal of justice in what the druggist says. He has passed difficult examinations, and he has spent a good deal of money in qualifying himself for his business. It is hard that he should find his legitimate work taken from him by the doctors. He may make money by selling soap, and tooth-brushes, and patent medicines, and so on; but it was not for this that he worked hard and faced the examiners. He studied the properties of drugs, and the mysteries of their compounding, in order that he might be fitted to dispense doctors' prescriptions with knowledge, and so with safety. Finding this work taken from him, it is not surprising that he retaliates by listening to the tales of woe brought

by his customers, shaking his head knowingly, and treating their symptoms.

There are some druggists who do an enormous business in counter prescribing. The average person who is out of sorts does not wait to consider that a druggist has had no medical training; that he knows little or nothing of the true significance of certain symptoms; that the underlying causes of disease are a sealed book to him. The patient sees the druggist's array of bottles—usually a much more imposing array of bottles than is to be found in a doctor's dispensary; he is aware that the druggist understands the properties of drugs, and that he is skilled in mixing them in an attractive manner. The patient is convinced that he needs a bottle of medicine, and he goes to the druggist and asks for it. The druggist is seldom chary of supplying it, either from the habit-producing "patent" or the so-called "now-secret remedies" supplied by certain wholesale manufacturers, or from his own make up.

Now, while the average druggist knows very little of the science of medicine, he knows that certain drugs, in requisite doses, will relieve certain symptoms. The patient cannot sleep: then he shall have a sedative mixture. He has pains in his head; then he shall have a box of pellets or powders. He has pains in his joints; then he shall have a liniment. He has a skin eruption; then he shall have a pot of ointment. He has a sore throat; then he shall have a gargle. In the majority of cases no harm is done; but there are instances where this sort of unskilled treatment is disastrous.

The patient's sleeplessness may be an early symptom of grave disease of the brain; and so may the headache. The joint pains may be anything, from mild rheumatism to malignant bone disease. Whatever it is, skilled treatment is called for. Mild rheumatism, if neglected, may lead to permanent heart weakness and premature death. The skin eruption may be a symptom of serious infectious disease, for which a pot of ointment is worse than useless. The sore throat may mean diphtheria, for which something a great deal more powerful than a mere gargle is needed.

The danger of the prescribing druggist is no fancy picture. It is a very real danger, as every doctor who has been in practice for any length of time can testify. It is he who sees the patients, after the druggist's amature treatment has failed, and some of his stories are rather horrifying.

It will be seen that the question "Should doctors dispense?" is a far-reaching one. With it is bound up a great deal that is not apparent at first sight. First and foremost it opens up another question, "Should druggists prescribe?"

It should be plain to everybody that the reply to both questions is "No." If the law were to forbid doctors to dispense, except in emergencies, and druggists to prescribe, a great step forward would have been taken. The doctors would be freed for work which is essentially theirs; while dispensing would be done far better than it is at present—for druggists dispense a great deal better than doctors; and people would be saved from amateur, and therefore dangerous, doctoring.

A. G. PRACTITIONER.

The Dairy Farmer's Side

Sir:—It has occurred to me that the dairy farmer deserves to have his side of the case considered in all this discussion as to pure milk and dairy regulation. In an effort to secure justice, a fair return for his labor, and immunity from unwarranted criticism, the farmer needs organization and this organization should be provided for him by a Dairymen's League. The purpose of such league would be to oppose and prevent monopoly in the production or sale of milk, and to encourage competition therein, and to protect its members and the consumers of milk against monopoly, or any unlawful combination of any kind, whereby the producers or consumers of milk are injuriously affected, to promote legislation, to assist authorized boards of health in passing ordinances which will be beneficial to the farmer and stockholders, who are producers of milk for metropolitan districts, and other markets, and to act as their agents in marketing their products.

There is not a man to-day who can take a herd of cattle, twenty-five in number, of the best milk producers, and purchase them at an average rate of $65 per head, and milk them two years, and in

any way get his money out of them again. Taking the cost of their feed, together with his labor, he has nothing left for his work. This has been thoroughly figured out by men using a pencil and their brains, and they find that a farmer cannot produce milk for anything less than four cents per quart, and they should have one-half of the retail price, which is, in metropolitan markets at present, eight cents per quart and upward.

It is not any wonder that so many of the creamery companies are getting immensely wealthy, and that their stock is paying twenty to thirty per cent., besides paying their high-salaried officers, who are living upon the fat of the land, which all comes in the end out of the poor farmer, who toils from 4 o'clock in the morning until 9 o'clock at night, and lies down at night tired and weary, only to awake in the early morning and know that others have reaped the benefit of his hard labor. All these years past he has been toiling practically for naught.

It isn't any wonder so many farmers are leaving the farm every year, and especially in the past ten years. Statistics show us that many of the farmres of today are seeking small farms, with as few acres as possible, merely to make a living and get along on, as it has always been impossible for them to make anything on large dairy farms, on account of the low price of milk. Now when the farmers are once thoroughly organized, and will then be able to demand their rights, it will then be that the large dairy farms will be greatly sought after, and the farmer will then receive some profit and benefit from his labor. Again, a Dairymen's League would be meant to educate the people living in the great cities in the truth that the farmers produce pure milk from their herds of well-kept cattle.

At the farms the milk is not full of deadly microbes, as has been stated by boards of health, who have failed to examine the milk at the homes of the farmers, where they would always find it in a purely sanitary condition. The farmers deliver this same pure milk to the different shipping stations in forty-quart cans, at which places one to two quarts of cream are skimmed from each can. The cream is shipped to the different cities and readily sold for forty cents per quart. The rest of the milk in the can is left to be doctored up and also shipped to the different cities and sold for pure milk to the dealer, who allows it to remain in his back yard and alley, where goats, ducks and chickens are all harbored together. He then retails a quart or so to some private family, where the mother of the infant for whom this milk is purchased is too lazy or does not know enough to keep the nursing bottle in a sanitary condition, and it causes the infant to become sick. The family physician is called, who diagnoses the case as microbes in the milk, causing the sickness of the child, and the farmers are blamed as producers of milk containing microbes, which, they claim, is the cause of the death of so many infants in our cities. It is an outrage and an insult to the farming class to be accused of any such a thing, when they are the producers of pure milk. We are down on any sterilized, pasteurized or monkeyized milk, as we favor pure milk from the farmers' herds. Some of our recognized authorities have very broadly stated that the farmers are producers of pure milk.

I have recently made a canvass among many farmers in this country, where they were raising babies on the bottle in their own homes, on the milk from their own herds, many taking the milk warm from the cow, and in every case I found healthy, hearty, robust children, and none of the children reared in any of these families have been made ill by the milk. A Dairymen's League, when thoroughly organized, would better the condition of the milk shipped to the cities, which should increase the sale of milk at least one-third. Stop and look at the many organizations of labor unions throughout the country. Were it not for their organizing, what would be their condition?

We do not believe in strikes, if they can be averted, but we do believe in union, for in union there is strength. Look at the Brotherhood of Locomotive Engineers, the Railroad Trainmen, the Miners' Union, the Bricklayers' Union, and the many others, how they have bettered their condition by organizing themselves.

Then stop, if you please, and look at the farmer, how he has toiled these many years, and still the mortgage remains upon

the farm. His children have left the home and gone into stores, factories and workshops for employment, because there was not money enough made upon the farm to produce for them a comfortable living. Organization provides the remedy for these conditions. When the price paid the farmer for milk has become more than double what it is at the present time, then the cow will become the mortgage-lifter, the food supplier, the clothing equipper, the house and barn decorator, and, in fact, the general improver upon the farm, and will make the home environments so pleasant that the children will desire to remain upon the farm, and the city people will be seeking homes in the country.

W. C. McM.

Meetings and Reports

DOMESTIC

Dominion Council on Public Health.

The recommendation of the health branch of the commission on conservation for the establishment of a national laboratory and the creation of a Dominion council on public health has been approved. The chief object in establishing the laboratory is to secure cheaper and purer supplies of vaccines, anti-toxines, etc. The duty of a Dominion council will be to advise both Dominion and Provincial Governments as to matters affecting public health.

Progress of Fort William's Campaign Against Infant Mortality.

The report of Dr. Robert E. Wodehouse, medical health officer of Fort William, recently submitted to the City Council, is as follows:

Chairmen and Members of the
Board of Health:—

Gentlemen,—I beg to report progress in the campaign against the mortality of infants in our city. The principal factor that is working to improve conditions this year is the health visiting nurse's work whom your honorable board saw fit to provide for in this year's estimates. The effect of her work and the good spirit in which the mothers receive her visits and advice have greatly exceeded our anticipations. The second feature contributing to our success this year is the publicity granted by the press to all helpful matter for publication.

The nurse has visited the home of everybody born in Fort William during the past 12 months. She has given me a complete report of each place visited as to sanitary condition and methods inside the house, plumbing and drainage, sanitary condition outside the house and in the yards, lane and street adjoining. This part of Mrs. Williamson's report has been the cause of the trough ditches in the coal docks being flushed with hose once a week and other earth ditches made to drain themselves, also the cleaning up under the sanitary inspector's direction of (25) twenty-five different addresses.

The reports also tell me how many babies have been born to mother, how many have died, how they were fed and how the present baby is being fed and if artificial feeding, of what nature and whether by a doctor's order or not. The reports to date cover (411) four hundred and eleven babies.

Three hundred and forty babies are breast fed. These need no further attention from us.

Forty-four babies have been breast fed a few months, but are now mixed fed. In 17 of these the change was made without doctor's advice.

Twenty-seven babies have been artificially fed since birth, six of these babies being so fed without a doctor's order. The last two classes will be revisited as often as possible by your nurse. In the last group the cow's milk is kept on ice in two cases.

Some interesting information has been obtained. Three children of one mother have died of diarrhœa before reaching the first year of age, all artificially fed.

One child, breast fed two months, afterwards fed bread and milk, is very sick with diarrhœa.

Mrs. Williamson has anywhere from 7 to 12 babies under her care daily whom she visits and carries out the doctor's orders, and she has not had one single baby under her care for diarrhœa which was being breast fed.

So far this year we have lost 12 babies; this time last year we had lost 33 babies. July mortality was 25 p.c., or one-fourth of July, 1910.

Dr. Laberge on Rat Suppression.

Dr. Louis Laberge, health officer, of Montreal, has recommended that a man be employed as a protection to both private property and health against rats.

The manager of the Molson warehouses, of 998-1028 Notre Dame Street east, wrote to the controllers on July 13 saying they understood their previous communication of last February had been taken into consideration, but as nothing had been since heard of the matter, and as loss and annoyance from rats still continued despite private efforts to abate the nuisance, the firm wanted to know whether the city intended to do anything or to remain simply passive in the matter. The letter concluded with the remark:

"We have proof, as evidenced by holes bored outside our building on Notre Dame Street and on the river front, that a fresh supply is coming in constantly from the sewers and wharf."

It is for the latter reason, as one firm cannot cope with the whole rat problem, the supply being constant from the outside, that the controllers have been appealed to. The latter find, however, that it is a pretty large undertaking to begin to fight rats all along the harbor front, and up to the present nothing has been done, except by private houses in their own interests.

Dr. Laberge, in his communication to the board, states that he has already addressed them at length on the question of damage caused by rats, and that he had submitted three names of persons who claimed to be able to exterminate rats on a large scale by scientific methods.

"There is no doubt," says Dr. Laberge, "of the necessity to find means to suppress as much as possible this brood of vermin. It is also a matter of public health, and I do not hesitate to suggest that the services of a competent expert be retained to take charge of this work for a limited period of time for the purpose of testing the efficiency of the plan submitted."

Manitoba Medical Association.

At the annual convention of the Manitoba Medical Association, Dr. F. S. Keele, the president, in his opening address referred to the position of Manitoba University. He commented particularly on the fact that such departments as civil, electrical, mechanical and mining engineering were of necessity expensive ones to run. This was practically impossible for the university as at present constituted. These departments, in his opinion, should not be separated from the university and run as separate institutions. The only rational solution of the problem was the construction of a provincial institution free from all denominational fetters and intercollegiate squabblings. Such an university would stand for the development of all the resources of the province and would be financed by the people through the provincial government.

Owing to the very inclement weather there was not the large attendance which was expected, only twenty-six doctors being present. Dr. S. F. Keele, of Portage la Prairie, opened the convention by calling upon Mayor J. J. Garland to give an address of welcome from the city. An instructive address on the Ninette Sanatorium was given by Dr. D. A. Stewart, and Dr. Gordon Bell gave an address on vaccine. Both addresses were freely discussed.

In his address on the Ninette Sanatorium, Dr. Stewart spoke in part as follows:

"On admission patients are classed as 'Incipient,' 'Moderately advanced,' and 'Far advanced,' and on discharge as 'Apparently cured,' 'Disease arrested,' 'Improved,' or 'Unimproved.'

"As a matter of fact, of the 139 patients received up to the end of March, 52 per cent. were classed as 'Far advanced,' and only 15 per cent. as 'Incipient.' A number of these 'Far advanced' cases have done well under treatment. Still the fact remains that they are 'Far advanced' cases, the cure of which must be at best a sort of patched-up affair, or merely a truce with the disease, not a victory over it.

"Of patients admitted as 'Incipient,' even counting those who did not remain anything like long enough under treatment, nearly 85 per cent. were discharged as 'Apparently cured' or as having 'Disease arrested.' Of those admitted as 'Far advanced,' though many of them have done remarkably well, none have been discharged as 'Apparently cured,' and less

than 9 per cent. as having 'Disease arrested'—one-tenth as many as in the 'Incipient' class. All the deaths during or after treatment have been among those classed on admission as 'Far advanced.' . . .

"Allowance must be made for the undoubted fact that in Manitoba at the present time the general public is so ill-informed that tuberculosis is allowed to run on to a far advanced stage in some cases before the doctor is consulted. But, making allowance, the histories of our cases show distinctly that the diagnosis is not made anything like soon enough.

"It is found, as it is found at the beginning of sanatorium work everywhere, that many patients come in with rather ridiculous ideas as to the length of time it will take to effect a cure. Some are persuaded to remain, but some leave after a short stay, thinking that because they look better and feel better they must necessarily be almost perfectly well again. Many who might have gone on to "Apparently cured" or "Arrest of disease" could not be classed beyond simply "Improved," on account of their short stay. An analysis of the results show a very much greater improvement in patients who remain 5 or 6 months than in those who remain 3 months or less.

"Even yet we hear of patients being sent west and south, with the hazy idea that some mysterious property of the atmosphere will cure them in spite of themselves. For the average case the climate of Manitoba is possibly as good as any on the continent, especially a Manitoba winter. The tendency is now to send them north rather than south, especially in winter."

Among those present at the convention were:—Doctors Ingersol, of Hamilton; Emil Reis, of Chicago; J. Halpenny, Gordon Bell, H. P. Galloway, H. H. Chown, A. G. Montgomery, George Stephens, C. E. Fortin, S. J. Elkins, Neil J. McLean, and J. R. Jones, of Winnipeg; R. B. Culbertson, W. J. Harrington, Dauphin; James Montgomery, Deloraine; W. A. Bigelow, Brandon; D. G. Ross, Selkirk; W. Mason, Napinka; D. A. Stewart, Ninette; R. O. Rice, Minitonas; F. S. Keele, W. H. Rennie, H. J. Hassard, W. E. Metcalfe, E. J. Lundy, A. E. Walker, and A. P. McKinnon, Portal.

Chicago's Exhibit at Toronto.

Dr. C. St. Clair Drake, of the Bureau of Vital Statistics of the Chicago Health Department, will have charge of a Chicago exhibit at the Canadian National Exposition in Toronto August 25 to September 11. Many cities of the United States have been asked to take exhibits to the exposition, as a large section will be devoted to the attention of public health. Dr. Drake will lecture during the fair. Breathing dolls, showing the effect of badly ventilated rooms on humans, and the baby death-rate model will also be shown.

Port Arthur Bread.

The Board of Health at Port Arthur has ordered that the delivery of bread shall be made with each loaf in separate wrapper.

Milk in Winnipeg.

Exhaustive reports from sub-committees of the City Council, appointed to consider the best methods for the bettering of the milk supply of Winnipeg and to formulate some line of action for the elimination of tuberculosis in dairy herds in the vicinity of that city have been adopted.

The report of the committee associated with Health Officer Dr. Douglas says:

"It is now generally recognized that bovine tuberculosis is transmissible to human beings through using the milk of cattle affected with the disease. Milk is the staple article of diet for children up to one year of age, and all children and adults use milk or its products in one form or another daily throughout their lives.

"It is an unfortunate fact that large numbers of tubercular cattle are at the present time supplying milk to Winnipeg and numerous other cities and towns. The situation has been faced by other cities, states, and provinces. The British Columbia Provincial Board of Health regulations governing the sale of milk, section 25, states that cow keepers and dairymen must have a certificate from a veterinary surgeon that cows from which milk is obtained for sale are free from tuberculosis; such certificate to hold good for six months from date of issue provided that disease is not in evidence in the meantime.

The states of Minnesota, Wisconsin and Virginia compel all cattle to be tested. The cities of Vancouver, Washington, Minnea-

polis, Kansas City, and St. Paul compel all cattle supplying milk to be tested. New York and Chicago say that milk must be from tested cattle or pasteurized, and after a certain date all milk for pasteurization must be from tested cattle.

"As time goes on the problem becomes harder to face owing to the increased demand for milk, and the increasing supply. We feel that it will be for the benefit of all parties concerned, the public, the farmers, the dairymen, stock raisers and creameries that steps should be taken at once to stamp out this disease, and we make the following recommendations:

"1. That no new dairy licenses be granted to dairymen unless they consent to have their cows tested when required by the provincial or municipal health departments, and that the construction of their stables and plant comply with the requirements of those departments.

"2. That dairymen at present in business be given until June 1, 1913, to get their herds free from diseased cows, and their stables altered to suit modern requirements, after which date they will have to comply with health regulations and shall now have their milk pasteurized.

"3. That farmers supplying milk and cream to creameries be given until June 1, 1915, to get their herds free from tubercular cattle, and until 1913 to get their stables into sanitary condition; until that date all milk must be pasteurized in compliance with Dominion regulations.

"4. That all cows reacting to the test shall have a "T" punched in the right ear as required by the veterinary director general's department, and all healthy cows shall have a numbered or dated tag placed in right ear.

"That after the herd has been tested, if diseased cattle are found, the stables shall be cleaned and disinfected. All cows added to herd shall be tested previously, unless owner has a certificate from a qualified veterinary surgeon stating that cows have been tested within six months and found free from disease.

"The health department shall grant certificates to dairymen as soon as their herds have been tested and all diseased cattle removed.

"5. That farmers shipping to creameries shall first be required to furnish the health department with test charts of all their cattle, said tests to be made by a qualified veterinary surgeon, and their barns must be up to standard of regulations after June 1, 1913.

"6. That By-law 5537 will require to be amended to suit modern conditions. The milk standards therein contained do not agree with Dominion and provincial regulations. The building sections are not up-to-date, and regulations governing pasteurizing plants and the sale of buttermilk and patent milks and products made from milk and cream will require to be inserted.

"7. The matter of milk transportation will have to be regulated, the present methods being very unsatisfactory. Some districts have only train service two or three times a week; milk cans are allowed to stand in the sun on the country station platforms in summer; the railway cars have no ice supply—all of which entails great loss to producers.

"The most common cause of tuberculosis among cattle is by ingestion, their food becoming contaminated with the feces of diseased cattle. Dr. E. C. Schroeder, of Washington, as reported in *The Public Health Journal* for June, 1911, places on record as a low estimate 37,000,000 tubercle bacilli in the manure of a tubercular cow for one day.

"Cows in this country are stabled for six months or more during the year, and the importance of sanitary construction of cow barns will be readily realized. Good light and ventilation are essential requirements; and if not full concrete floors, at least concrete gutters, to carry off liquid manure, should be provided. Wooden floors absorb liquid, and cows in such stables are sure to become affected if even only one tuberculosis cow has been introduced into the herd.

"Many farmers make unnecessary expenditure on their barns. Sanitary barns are not the most expensive, and we feel sure the farmers will welcome education along these lines.

"The licensed dairymen have improved their premises 75 per cent., taking advantage of the lectures given by the dairy inspectors during the past year, and to summarize what is required to get a pure, safe milk supply we would instance the following:—

"First—Put the barns in sanitary condition.

"Second—Test all cows and remove diseased cattle.

"Third—Improve the methods of transportation, keeping the milk thoroughly cold.

"Fourth—Proper feeding of cows.

"Fifth—Cleanliness in the handling of milk, and prompt cooling of same.

"This problem will have to be faced, and as time goes on it becomes harder. We would therefore recommend that steps be taken along the lines suggested in order to eradicate this preventable disease.

"The following is a list of milk prices in cities where testing is enforced:—

"Minneapolis, 6 to 7 cents per quart.

"St. Paul, 6 to 7 cents per quart.

"Milwaukee, 6 to 7 cents per quart.

"Rochester, 8 cents per quart.

"Montreal, 8 to 9 cents per quart.

"Vancouver, 10 cents per quart.

"The present price of milk in Winnipeg is 8 to 10 cents per quart."

Some weeks ago the solicitor for the dairymen of the Winnipeg district wrote a letter to the committee outlining the terms on which the dairymen would be willing to co-operate with the city in a campaign for the elimination of tuberculosis from dairy herds. The report answers the points raised in the order made as follows:

"1—That all cows be tested by a certificated veterinary surgeon. Your sub-committee thoroughly concurs in this.

"2—That such test be made at the city's expense. Your sub-committee concurs in this.

"3—That all cows passing such test be tagged in the left ear with date when tested. Your sub-committee concurs in this.

"4—That the city take over all condemned cattle. Your sub-committee does not advise that this request be acceded to. The city has no facilities for handling cows that it may be necessary to take over, and we are not clear as to what ultimate disposition could be made of said cows.

"5—That the city make compensation for all condemned cattle at actual market value. In this connection we desire to point out that this would appear to us to be rather a matter for the federal or provincial authorities, or both, to deal with. The city has no appropriation for such purposes. It is a difficult matter to state how large an amount would be required, or how far afield we would have to go to compensate owners. It is certain, however, that a very large sum would be required the first year. The question as to whether the city should bear all costs for animals condemned appears to us a debatable one—in all places of which we have any record where compensation is allowed such compensation covers only part of the total value of the animal, usually a third; moreover, we know of no city where a system of compensation even on the basis of partial value is in vogue. This is invariably a provincial or state matter.

"6—That the city establish a central depot or market from which dairymen may obtain fresh certified cows. This appears to us to be impracticable almost to the stage of impossibility.

"7—That a qualified veterinary surgeon be maintained at the city's expense, whose services should be at the disposal of the dairymen. If this refers to tuberculin testing only it is answered under clause one; if it refers to all veterinary practice arising at the dairies, we are of the opinion that the city is not called upon to provide for treatment of this kind.

"The question of a city pasteurizing plant raised in the solicitor's communication is a very large one, and one that we consider would have to be very carefully gone into before such a project was embarked upon. The initial expense would be very large, and the matter of interference with the vested rights of pasteurizing plants already in the business merits attention. We are not certain that at the present time the city has power to enter into such an undertaking, and we do not know of any community where this is done. In our opinion the only justification for the city seriously considering this proposal would be, if it could be absolutely shown that improper combinations were at work to keep the price of milk at abnormally high figures, and that, by the city taking the field, such price could be materially reduced and kept at a proper basis."

The Chatham Crusade.

The Chatham City Council has decided to conduct a war against three evils in that city: the house fly, the improper keeping of chickens and the improper disposal of natural gas fumes.

By-laws are now being prepared which will require all fly-breeding refuse to be covered with wire screens, to regulate the keeping of chickens within the corporation so that they will not be a nuisance to neighbors, and also to require all smoke stacks from factories and other places where natural gas is used in large quantities to be of sufficient height that the burned fumes and the unused gas will not be inhaled by pedestrians and residents in the neighborhood of such factory.

The School of Commerce.

McGill University is keeping pace with the demand for education of a practical character and has just established a School of Commerce, the programme of which is designed to combine an essentially practical education with that amount of general culture which every business man should have. The course of two years leads to a university diploma. Evening extension classes will also be arranged, and a diploma is also possible for students.

Drs. Hodgetts and Drum in Europe.

Dr. Charles A. Hodgetts, Medical Advised to the Commission of Conservation, and Major Lorne Drum, M.D., D.P.H., Militia Headquarters, Ottawa, General Secretary of the Canadian Public Health Association, sailed for Europe on the 5th of last month by the R.M.S. Megantic to attend the annual conference of the Royal Institute of Public Health at Dublin and the World's Hygiene Exposition at Dresden. Major Drum was one of those elected members of the Royal Sanitary Institute at the recent meeting of that body.

Ottawa Sewage Disposal.

The plan proposed to the Ottawa Civic Commission, on pure water and sewage disposal, for the disposal of sewage in that city is to deposit all of it at a point below Kettle Island, well out in the centre of the river and far distant from any of the present sewers or the intake pipe. It will be presented in the report of the commission, at the same time as it reports on the pure water problem.

The intention is to connect up the west-end drainage system with the new scheme, and instead of depositing the affluent from the system into the Ottawa near the intake pipe as is now the plan, to carry it through the city partly by the existing sewers and partly by new ones to be constructed, to connect up all sewers emptying into the Ottawa and Rideau Rivers within the city's limits, and join all into one main which will be carried out under the river to below Kettle Island and there emptied.

The estimated cost of the project will be over half a million dollars, but the commission unanimously feels that Ottawa will never be out of danger of epidemics such as occurred this spring until the question of sewage disposal is well and finally settled.

The sewage would be forced through the lengthy system by means of pumps and the entire sewage of the city deposited so far away from the source of the water supply that no possible danger of any further contamination could exist from this source.

The plans of the west-end drainage system, at present under construction, will be considerably altered if the proposal is adopted. The outlet for this system is at a point above the C. P. R. bridge above the Chaudiere. Septic tanks and bacteria beds are to be built before the outlet, and the intention is to carry the affluent through steel pipes down along the side of the intake pipe to a point near the Chaudiere Falls, where it would be discharged. If the report of the Sewage Disposal Commission is adopted this latter part of the system will not be built, but the whole will be connected up with the main sewer to be built.

In a word the proposal is that no sewage be deposited in the Ottawa River from the city at any point within the city's limits. The main idea is to carry it as far away as possible before discharging it from the mains.

INTERNATIONAL

American Climatological Association.

The twenty-eighth annual meeting of the American Climatological Association was held at the Windsor Hotel, Montreal, June 13th and 14th. The meeting was well attended. At the closing session Dr. A. D. Blackader, of Montreal, was elected president for the ensuing year in recognition of the active interest he has taken in its work. Dr. Blackader is the first Canadian to hold this office.

The Far Eastern Association of Tropical Medicine.

The Far Eastern Association of Tropical Medicine announces that the second biennial congress will be held at Hong Kong, China, January 20th to 27th, 1912, under the presidency of Dr. J. Mitford Atkinson, Hong Kong. The general classification of the work of the congress is included in the following groups of subjects:—1. Protozoology, helmintholgy. 2, Cholera, plague, leprosy, tuberculosis. 3. Tropical fevers, malaria, beri-beri, dysentery. 4. Surgery, obstetrics, infantile diseases. 5. Climate, hygiene, sanitation. It is requested by Dr. Francis Clark, secretary-treasurer general, Hong Kong, that abstracts in English of papers be forwarded to him as soon as convenient. Papers may be read in English, French, or German.

International Congress of Dermatology and Syphilology.

A change has been announced in the date set for the seventh International Congress of Dermatology and Syphilology, to be held at Rome. To suit the convenience of many members, the date of meeting has been put forward a week. It will consequently be held from September 18th to 23rd, 1911, instead of from the 25th to the 29th.

International Congress and Infant Mortality.

The third international congress for the study of questions relating to infantile mortality and the protection of infant life will be held at Berlin this month, from the 11th to 15th, under the patronage of Her Majesty the German Empress. In addition to scientific discussions, the programme will include an inspection of the measures taken in Berlin for the reduction of infantile mortality, as well as a visit to the International Hygiene Exhibition in Dresden, where a special department is being devoted to infant hygiene.

International Congress of Criminal Anthropology.

The seventh International Congress of Criminal Anthropology will be held at Cologne in October, 1911. The official languages of the congress are German, French, English, and Italian, but it is requested that, if possible, only German or French should be used in the discussions. Among the subjects proposed for discussion are the influence of tendency and environment on crime; the morphology and psychology of the primitive races of man; the present state of criminal psychology; morphological abnormalities, especially of the skull, in relation to the legal view of responsibility; the treatment of so-called diminished responsibility; the prison system; accommodation for dangerous lunatics. A number of papers will also be read. In connection with the congress there will be an exhibition of objects relating to criminal psychology, such as models and plans of institutes, safety appliances, apparatus for the examination of patients, literary and other works of patients, weapons and instruments for breaking loose. All information as to the congress will be supplied by Professor Aschaffenburg, 130, Stadwaldgürtel, Cologne, Lindenthal. Communications as to the exhibition should be addressed to Staff Surgeon Dr. Partenheimer, Psychiatrische Klinik, Cologne. Those who intend to take part in the congress are requested to send their names to Dr. Brüggelmann, Psychiatrische, Klinik, Cologne.

International Congress on Tuberculosis.

The International Congress on Tuberculosis which was to have been held in Rome

in September next has been postponed till April, 1912.

The Eighth International Homœopathic Congress.

The eight International Homœopathic Congress in London, England, began on July 18th last, with the delivery of the inaugural address of the president, Dr. George Burford. There was a large gathering of medical men and women.

The Congress, said the president, was the most widely represented one ever summoned under the ægis of homœopathy. Why did they as medical men meet as a detached body in separate assembly? Their isolated position was one of the anomalies of medical statesmanship in the past. A hundred years ago an original thinker in medicine, exercising the liberty of thought which was his professional birthright, carried the inspiring spirit of the Renaissance into medicine, and, by arduous and protracted experiment, evolved many new facts and a new law. This was a definite, and, as they considered, successful attempt to convey the methods of science into medicine. Had this discovery been made a hundred years later it would have linked up in a perfectly natural way with contemporary science and been hailed as *lux in tenebris* by original workers in medicine in search of a unifying principle. Appearing when it did, however, it was treated by controversial methods savouring of the Middle Ages. Hahenmann, a University graduate of the highest promise, master of eight languages, a brilliant physician, a first-class chemist, was subjected to much persecution and many indignities as the result of the publication of his *magnum opus*, and in three years was driven from his place of abode and practice. The whole account read like a description of a heresy hunt in the Middle Ages, and was totally at variance with the traditions and instincts of a liberal profession. Certainly the isolation of homœopathists was not of their own seeking. It was one of the many tragedies of science which history had to record. The results had been deplorable. While possessing sufficient vitality to take root and spread all over the earth, homœopathy had been cribbed and confined in its later development, and in many places squeezed out of existence.

But as an outside influence, homœopathy had ousted the wholesale bleeding, blistering, mercurialization, and so forth of the Georgio-Victorian era from the practice of medicine. But even now every week witnessed the launch of some new "Dreadnought" in the shape of a much-vaunted remedy. Early enthusiasts obtained successes in all sorts and conditions of cases; later workers failed to repeat them, thus justifying the cynical advice of an astute physician who said that a new remedy should be given while it still cured. Inductive logic swept away the claims of the inventors of these new cures. He did not propose to dwell on the direct scientific proof of the law of similars developed and organized as homœopathy. This was verified thousands of times daily. Vaccine therapy, serum therapy, X-ray therapy, and radio-active therapy were all unconscious illustrations of the intellectual groping of their sponsors after a therapeutic guide, and that guide, one and indivisible, was the law of similars. With regard to the future, they looked forward to a development of homœopathy of which as yet they could only conceive the outline.

After referring to the origin of these Homœopathic Congresses in 1876, the president proceeded to recommend the formation of an Inter-Congressional Board, with a view to securing continuity of cooperation among the homœpaths of the world. He invited that Congress to become an epoch-making gathering by instructing its officials to draft a scheme embodynig his suggestion.

The American Veterinary Medical Association.

The American Veterinary Medical Association opened its convention in Toronto on the 22nd of August last. There were about 1,000 delegates present. Prof. Hobday represented Great Britain, and Prof. Gruener was the official representative of the Russian Government.

Dr. George H. Clover, Fort Collins, Colorado, in the course of his presidential address, touched on a number of interesting subjects, including the treatment of rabies and tuberculosis.

"Our work," he said, "must go forward by three parallel and seemingly equally important lines: first, combating

disease wherever found, and by every known agency; second, fortifying the body by its natural defences and other agencies; third, waging a relentless warfare against pathogenic micro-organisms. The vastly overestimated value of drugs in the treatment of disease was a relic of mediæval superstition, and belief in magic. The reaction which threatened to carry it to the other extreme has been gradually giving away in the light of modern science to an increased confidence based on a more enlightened and conservative therapeutics.

"In surgery we have made great progress, but we are now and must continue to be content with second place in major surgery. We cannot reasonably deny this fact, when we stop to consider that practically all major operations on the human are performed in well-appointed hospital, while in our subjects, their removal to even such hospitals as we have, is scarcely practicable; their lack of intelligence causes disastrous interference, their bodies are covered with hair, and the incentive for our services is largely pecuniary."

The president touched on the rabies question.

"Reports from many sections of the county," he said, "show an alarming increase of rabies. In England rabies was stamped out, largely by compulsory muzzling of dogs. In this country, a doubt fostered by some misguided medical confrères, as to the reality and importance of the disease, combined with a maudlin sentiment for the dog, has made the enactment of muzzling ordinances in most cases impossible. The success of the pasteur treatment can no doubt be reasonably questioned. An anti-rabic vaccine for the preventive treatment of rabies in both the human and lower animals is on the market."

Dr. Glover also discussed hog cholera, which he called the great scourge, and also the Southern cattle tick.

The prevalence of tuberculosis was emphasized. According to the United States statistics of 1908, out of 400,008 cattle tested, 3,700, or 9.25 per cent., gave reactions. Of these 24,984 were slaughtered and 93.39 per cent. were found tuberculous.

"Statistics like these," said Dr. Glover, "are invaluable and give us a more definite understanding of the magnitude of the problem confronting us. The subcutaneous tubercular test is one of the great discoveries of modern times. Its reliability is no longer questioned, save in rare instances of the rankest prejudice.

"We know the cause of tuberculosis; we know how to detect it in animals; we have an ample knowledge of its extent, its stupendous economic significance and the terrible tax it levies on human life. We are still hesitating and confused—waiting for some genius who can evolve a plan of campaign which will afford some hope of final success. Until we are ready to pave the way by recommending a feasible and systematic plan of campaign we cannot justly claim the indifference of the people as sufficient cause for inaction. Until the public are aroused from their lethargy and come to a greater appreciation of its importance, we cannot expect that the selfish opposition will be removed."

UNITED STATES

United States Courts Uphold Public Health Laws.

The decision of the Supreme Court in upholding the validity of the St. Paul ordinance regulating the display of fruit and foodstuff outside of buildings, is one that will receive the approval of all who are interested in promoting and protecting the public health. This decision emphasizes again the fact that the police power of cities and villages for the regulation of all matters pertaining to public health is very broad and that the exercise of such powers will be upheld by the courts. The decision referred to is the second rendered very recently by the High Court on matters of health protection. The other was that sustaining the ordinance requiring the street railway company to sprinkle between their tracks.

Neither are unreasonable and both are necessary regulations for the protection of the public health.

In the past health authorities have been altogether too lenient in the enforcement of existing laws and local legislative bodies altogether too reluctant to pass necessary legislation in this direction, but these decisions should convince both that the crusade that is being waged for the greater safeguarding of the public health is not based on sentiment alone and that the courts will uphold all reasonable legislation along that line. United States city authorities are taking cognizance of these facts and acting accordingly.

Race Betterment League Formed in Chicago.

The Race Betterment League is the name of a new organization formed in Chicago. The league desires to know where girls are employed under conditions; where women and children are overworked; what stores do not provide seats for clerks, and where toilet arrangements are inadequate for clerks or patrons; where children are abused, neglected, starved or insufficiently clothed, and where the aged, the weak, the convalescent are located and uncared for, or any unfortunate girl or woman is homeless and needs a mother's care.

The United States National Oral Hygiene Association.

The National Oral Hygiene Association, having for its purpose the promotion of a plan to have dental clinics in public schools has been organized in Cleveland, Ohio, by dentists. Horace Fletcher, the food specialist, was chosen president.

An American Medical Association Paper on the Thyroid Gland.

That the mysterious and freakish thyroid gland, in combination with the effects of various diets, may exert a direct influence on the size of families, was one of the interesting inferences drawn from a scientific narrative of experiments conducted with mice, which was read at a recent meeting of the American Medical Association by Dr. Reid Hunt, of Washington, D. C.

Dr. Hunt said he fed two groups of four mice for four months, and found that fecundity or sterility depended upon the activity, or idleness of the thyroid gland.

One group was fed upon oatmeal and liver. This stimulated the activity of the gland, and at the end of the four months there were no little mice. On the other hand, the second group, which had crackers, milk, and eggs, increased to 101 in the same period.

Cornmeal and milk reduced the birth-rate for a third group of four mice fed upon this diet, had sixty-nine young in four months, compared to the ninety-seven record of the second group. Whether like experiments would produce similar results among all animals, including humans, Dr. Hunt did not say.

Chicago and Oiled School-Room Floors.

Oiled school-room floors to prevent bacteria being circulated in dust and wooden spoons for milk testing are two suggestions for sanitary improvement made by the Chicago Board of Health.

It is claimed by the board that in Birmingham, Ala., Dr. G. E. Oates experimented with oiled floors in school-rooms and found the condition materially improved. It was found necessary to oil the floors only three or four times a year and the expense was small. Then, too, the experiment proved that the oil saved the wood and saved labor by keeping the floors clean. The oiled floor question is said to be a big one in regard to public health.

Oklahoma School Health Clubs.

A new method of fighting the spread of tuberculosis has been conceived and put into operation by Dr. J. W. Echols, prison physician at the Oklahoma State penitentiary. The new attack is directed against the spread of the disease among children and is intended to be aided by school teachers. Supplies to start the fight locally are to be sent to any teacher upon request, provided a stamp for reply is enclosed.

The plan consists of the formation of "School Health Clubs" to which each child is given a copy of a set of rules to be pasted in his school books, and also is given a treatise on tuberculosis and its prevention to be carried home to the parents.

Among the "dont's" contained in the slip for the child are the following:

"I must not put money in my mouth," "I must not bite off my schoolmate's apple," "I must not drink from my schoolmate's cup," "I must not use my schoolmate's pencil," "I must not put anything near my mouth which has been in or about any person's mouth."

New York and the Registration of Births and Deaths.

The State of New York has taken a very important step forward in the matter of the registration of births and deaths through the setting forth of an opinion by Attorney-General Carmody that the license to practise medicine may be revoked if a physician fails promptly to report these items. The opinion was one given in response to the request of the State Board of Health, and is one that should be of greatest importance in the securing of reliable statistics. It seems strange that in the United States, whose citizens are boastful of the progress of the country, and do not fail to vaunt its superiority over European empires, republics and monarchies, there should be such utter neglect of the foundation stones of a knowledge of vital statistics. And yet it has been said by an authority that in that country, as well as in Canada, there is not a single state-wide system of registration. Those who have attempted, as has *The Public Health Journal*, to make comparisons of different items of vital statistics are aware that for less than a score of cities on the continent are there reliable data of the details of mortality; and as for registration of births, there were a year or two ago not more than half-a-dozen of the largest cities that could furnish them at all. In view of this unbelievable demoralization of vital statistics such a position as that established in New York is of great consequence, and the position of the State Board is most strongly to be commended. "The commissioner of health," writes Dr. Eugene H. Porter, himself, the commissioner, "regards the decision of the attorney-general as a very important document. The responsibilities resting upon local Boards of Health are clearly outlined and it is the intention of the department to see that their duties are carried out. The commissioner will take active steps to that end where the local Boards of Health fail to do so." The wider question of notification of disease is a thorn in the flesh of many lands. English physicians are demurring to some extent, and writing to the journals: "What right has the municipality to demand the confidential information in the possession of the family physician?" But there are only a few who disagree, the consensus of opinion being that infectious disease is to be fought at the bedside of the patient. It becomes the duty of the family physician to aid in the fight by giving to the authorities that information which will enable them to begin their work at the earliest moment. And as for registration of births, upon the faithfulness with which this is carried out depends the sight of hundreds of new-born babies. Truly registration is of enormous importance.

THE EMPIRE AND THE WORLD ABROAD

Royal Institute of Public Health Congress at Dublin.

On the 15th August last the Royal Institute of Public Health held its annual congress in Dublin for the third time. The first congress was held in that city in the year 1892, and since that time the institute has held its meetings in many cities of the Empire. The scene of the congress was within the walls of Trinity College, the University Board having placed the halls at the disposal of the organizers of the congress. The congress was under the presidency of the Countess of Aberdeen.

Health of English Towns.

In seventy-seven of the largest English towns 7,092 births and ,775 deaths were registered during the week ending Saturday, June 10th. The annual rate of mor-

tality in these towns, based upon the revised estimates of population according to the recent census, which had been 13.2, 13.3, and 13.0 per 1,000 in the three preceding weeks, declined to 12.2 per 1,000 in the week under notice. The death-rate in London did not exceed 11.6 per 1,000, against 11.8, 12.2, and 12.1 in the three previous weeks. Among the seventy-six other large towns the death-rates ranged from 2.8 in Handsworth (Staffs), 4.3 in Burton-on-Trent, 5.2 in Brighton, 6.1 in East Ham, and 6.7 in Walthamstow to 17.1 in Bootle, 17.2 in Bristol and in St. Helens, 17.8 in Huddersfield, 18.4 in Stoke-on-Trent, and 18.8 in Middlesbrough. Measles caused a death-rate of 1.7 in Sunderland, 1.9 in Great Yarmouth and in South Shields, 2.1 in Reading, and 2.2 in Smethwick; whooping-cough of 1.2 in Newcastle-on-Tyne, 1.5 in Smethwaick and in Burnley, and 2.0 in Middlesbrough; diphtheria of 1.3 in Gateshead; and diarrhœa and enteritis (of children under two years of age) of 1.5 in Rhondda, 1.7 in Rotherham, 1.8 in Wigan, and 1.9 in Devonport. The mortality from enteric fever and scarlet fever showed no marked excess in any of the large towns, and no fatal case of smallpox was registered during the week. Of the 3,775 deaths in the seventy-seven towns, the causes of 24 were not certified either by a registered medical practitioner or by a coroner after inquest, and included 4 in Birmingham, 4 in Liverpool, and 4 in Gateshead. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1,082, 1,097, and 1,140 at the end of the three preceding weeks, was 1,141 at the end of the week under notice; 152 new cases were admitted during the week, against 157, 158, and 185 during the three preceding weeks. There were 5 cases of smallpox under treatment on Saturday, June 10th, against 11, 7, and 6 at the end of the three preceding weeks, and no new case was admitted during the week.

Health of Scottish Towns.

During the week ending Saturday, June 10th, 922 births and 489 deaths were registered in eight of the principal Scottish towns. The annual rate of mortality in these towns, calculated upon the revised estimates of the recent census, which had been 17.7 and 16.9 per 1,000 in the two preceding weeks, declined to 14.9 in the week under notice, but was 2.7 per 1,000 above the mean rate during the same period in the large English towns. Among the several Scottish towns the death-rates ranged from 10.9 in Aberdeen and 11.4 in Dundee to 16.0 in Perth and 16.1 in Glasgow. The mortality from the principal epidemic diseases averaged 1.7 per 1,000, and was highest in Glasgow and Greenock. The 242 deaths from all causes registered in Glasgow included 9 from measles, 21 from whooping-cough, 3 from diphtheria, and 2 (of children under 2 years of age) from diarrhœa. Five deaths from whooping-cough were recorded in Edinburgh, 3 in Aberdeen, and 2 in Greenock.

Health of Irish Towns.

During the week ending Saturday, June 10th, 583 births and 354 deaths were registered in the twenty-two principal urban districts of Ireland, as against 690 births and 382 deaths in the preceding period. The annual death-rate in these districts, which had been 16.1, 16.5, and 17.1 per 1,000 in the preceding weeks, fell to 16.1 per 1,000 in the week under notice, this figure being 3.9 per 1,000 higher than the mean average death-rate in the seventy-seven English towns for the corresponding period. The figures in Dublin and Belfast were 18.3 and 15.5 respectively, those in other districts ranging from 4.4 in Newry and 5.1 in Clonmel to 22.9 in Newtownards and 23.0 in Londonderry, while Cork stood at 15.0, Limerick at 8.1, and Waterford at 13.13. The zymotic death-rate in the twenty-two districts averaged 1.0 per 1,000, as against 1.3 per 1,000 in the preceding week.

We are not content, now-a-days, to limit the action of the State to the protection of its citizens against harmful experiences. The State endeavors more than this. It strives to secure that the citizens shall not merely negatively suffer harm but shall positively be benefited.—

CHARLES MERCER, M.D., F.R.S.P., F.R.C.S.

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Special Articles

PURE WATER AT A MINIMUM OF COST FOR INSTALLATION AND MAINTENANCE

By A. P. REID, M.D.

PROVINCIAL HEALTH OFFICER, NOVA SCOTIA

Water is the most wonderful substance furnished by nature—to merely index its properties would take a volume. We will consider its use for potable purposes.

No living thing can exist without it, and yet were we to use a chemically pure water its effect on the animal economy would be deleterious. Nevertheless, Providence furnishes it in abundance in the combination required, but it is becoming a costly necessity due either to carelessness, ignorance, cupidity or crowded communities; and to the consideration of the latter condition we propose to give most attention.

Pure water to the hygienist is the chemist's element (H^2O), containing its ordinary amount of dissolved air, and small percentages of salines that may vary very greatly in composition as in quantity, but it must not contain organic impurity. If this be present, and from vegetable sources, it is less harmful; if the source be animal it is specially deleterious, for, being due to animal waste, it may be accompanied by active biological entities (germs) likely to cause sickness and many diseases, especially the endemic and contagious, for these are greatly dependant on this form of distribution.

Time being given, natural processes would convert these albuminoid or nitrogenous wastes of tained water into harmless nitrates by the (germs) microscopic living elements that depend for their existence on these nitrogenous wastes, and the whole would disappear when the food supply is exhausted.

We may note in passing that bacteria (germs) or microbes are indispensible to the disintegration and reduction to their simpler inorganic elements of all kinds of organic matter, the result of life waste, and their number and variety are governed by the amount and kind of material awaiting their services. Here and now we are most concerned with the soil and water supply.

The upper layers of the soil have most organic material, so there we may find a great abundance of germs or microbes of all varieties, and as we go downward organic substances diminish, and *pro rata*,

germs diminish. A few feet under the surface, below the roots of the vegetation, there is practically no organic substance and there are no bacteria. Since vegetables depend for their sustenance on inorganic material, the roots may and do penetrate beyond the layers of soil rich in germs and organic waste.

Hence spring waters (coming from deep sources), artesian or driven wells are sterile. Surface waters passing over contaminated surfaces and through the upper layers of the soil convey a percentage of their impurities to the streams and lakes, where the germs continue to flourish until their food supply fails. Sunlight also is inimical to their growth.

In ordinary parlance we say if there be animal organic waste there is sewage contamination, and in time the water will purify itself, all of which is true with proper limitations.

The animal constitution has such recuperative powers that we can dispose of a vast amount of injected dirt, but there are some varieties that even the strongest constitutions cannot handle with impunity. These are some of the pathologic microbes that can live a long time in water that is sewage tained and are specially malevolent. For example, let the ejections of a case of typhoid fever, cholera, etc., get into a well, lake or stream, even in small quantity, and the result: an outbreak of disease in those who have ingested the water, if it had not been sterilized by boiling, as in tea, coffee or other cooked preparations.

The remedies are patent to all: Avoid tainted water or remove tainted material.

The two methods are made use of, but they are beginning to border on the difficult, if not impracticable. Let us consider the salient points.

The untutored savage could camp beside the spring, lake or river with impunity. His successors followed the same role, and all went well until the tainting of the water overcame the natural powers for purification. Careless and ignorant people built their byres, stables, outhouses, etc., so that they drained into the water courses, underground as well as above ground. Cupidity throws all varieties of waste from the many types of factories into adjacent water courses, as it costs less to do so than otherwise to dispose of objectionable matter. These conditions are not difficult to remedy, but crowded communities mean concentration of objectionable material and less place to put it. This gives rise to the garbage cart and common sewer that, when well carried out, fairly well fills the bill, and the water supply may, with care, be unobjectionable, but to assume that large rivers can receive tainted effluents and so dispose of them as to continue to be good potable water is not in accord with the experience of to-day.

The mighty St. Lawrence and its influents and the Great Lakes were assumed to be perfection, but now they are tainted and disease-producing. This need not be wondered at when we consider the number of large cities and towns that discharge sewage and offal into these basins, and a population increasing and to increase; of the thousands of steamers and boats that are continually dumping offal of every type into those potable (?) waters. The time has come when concerted action must be adopted, very different from what now obtains. The remedy by filtration is being adopted, but at what cost and with what result the future will determine.

Every stream and lake over the whole of the country where population is dense is in like condition because these basins, being the lowest places, must be the reservoirs of drainage of all kinds.

The conditions above detailed to a variable extent prevail in detached buildings and rural communities.

Let us summarize present processes for treating waters more or less tainted.

1. *Dilution*—But this has failed with our largest lakes and rivers.

2. *Exposure to Air and Sunlight*—But the length of time needed to obtain the desired results too often vetoes this process.

3. *Chemical Treatment and Filtration*—But this, in addition to cost of maintenance, as well as installation, becomes a serious question where millions of gallons are daily required.

4. *Filtration and Bacteriological Filter Bed*—In addition to cost is very often inefficient, myhap due to a part of the bed allowing an impure stream to mingle with the purer.

The Chloride of Lime Process—

Here I may outline a most satisfactory method where only small supplies are needed, or in camp, or travelling, that is not costly nor difficult in technique. About .3 to .5 parts in a million (3 to 5 parts in 10,000,000) is the amount of chloride of lime required. It can be obtained by this method: Put an evenly filled teaspoonful of high grade chloride of lime into a teacup of water; dissolve. Then to this add 3 cups of water and bottle up for a stock solution. When needed, put a teaspoonful of the stock solution into two gallons of water (an ordinary pailfull), mix carefully, and it is ready for use, and all germ life destroyed. There is no need here to go into the rationale of the question; it suffices to know of its efficiency. This method can be adopted when or where there is a question of tainted water for domestic purposes.

But the aim of this paper is to indicate how good water can be obtained directly from its source.

There have been volumes, and observations by most skilled scientists, on the treatment of tainted waters, but we do not propose to further discuss it for two reasons.

1st. No generally practicable and reliable system has been devised. 2nd. The urban residents, who are chiefly considered in the discussion of this subject, will not average more than from 20 per cent. to 40 per cent. of the population, and the large balance of 80 per cent. to 60 per cent. of the village and rural population are nearly as much threatened by the dangers of defective potable water as are the urbanites, and demand our attention. We will consider each.

Detached Dwellings.

For want of a better distinction, let us class these as being those that have no common public supply or sewerage and generally depend on the well for supply.

The march of progress that has left little of this earth unexplored—on its surface or interior or overhead—has for some unexplained reason passed by the well.

The Well.

Let us consider the ordinary well. The two common varieties are:

1st. The surface well—a lined up hole in the ground that collects the seepage from adjoining territory; and the water in its reservoir must be tainted or not, owing to its source—as a rule tainted.

2nd. The Deep Well, which, it is assumed, taps the deep water courses (underground) and should furnish a good supply unless from faulty construction or care.

The neolithic man may have considered the invention of the well as a great advance. When, mayhap, the spring or water course dried up and the well would likely supply his wants, but since then invention in this line has been very limited.

Let us consider the defects of the well in order that they may be avoided.

Its purpose is to furnish easy access to the water supply that the underground water courses places at our commond. To achieve this, a pit is sunk till water is reached, and then it is lined up with stone or brick or wood (cement but rarely). Then all you need do is to drop a bucket with a rope to it or put in a pump, and there you are—no science nor theory is needed and what more would you have?

We want the water as it comes from its underground source, uncontaminated, and this the well rarely gives, and if it be an old well we can rightly assume it has ceased to do so.

The ordinary surface well is so objectionable that we need not discuss it.

The defects of the well are, assuming purity of water:

1. Seepage—The pervious walls of the well allows any water in its vicinity to percolate into it with possibility and too often probability of taint.

2. Storm water—Melting snow and rain floods washing into the well. Though this could be readily avoided it is too rarely done.

3. Filth accumulation in the well—bleached earth worms, frogs, toads, mice, rats, with other less excusable decaying matter I need not mention.

4. Silt Accumulation, that encroaches on and in time may fill up the water storage capacity.

5. Stagnant- water — Unless frequently renewed the water in the well is apt to become stagnant and impalatable, if not tainted.

6. Well cleaning—Hence it is evident

that the well should be regularly cleaned out (how many are?). This is always more or less costly and is a job that is difficult of accomplishment if the well be deep.

7. Danger—The press informs us of various well accidents of varied kinds from various causes. We need not dilate on them.

8. Cost of Construction—Those who have not had the experience will fail to appreciate the outlay needed to secure (as the phrase goes) a good well. If a deep shaft be required that has to pass through unstable strata it soon reaches into the hundreds.

9. And when all is done it may be a dry well or the water unfit for potable purposes.

10. Frost in winter is a frequent source of annoyance.

11. Location — To avoid contamination it would require to be at a distance from residence and outbuildings, which means inconvenience at all times and especially in winter, unless where pipe connection is practicable, which is the exception.

12. Cellar Wells dispose of the latter two difficulties, but they are not to be thought of unless as will appear *infra*.

The Remedy.

In considering these conditions I trust the reader will excuse some details of a personal experience, as it may assist the solution of a difficult subject.

When assuming possession of my present residence, I found two wells—one for the house and one for the stable—and a third was put down for a cottage. I may say that they had an unexceptional and never-failing supply of good spring water from an underground source.

Experiencing the difficulties detailed *supra*, the question to solve was: Plenty of water a few feet deep; how may it be obtained? The well is one plant, can there not be a better one?

If we go back a few decades of the last century, engineering was largely devoted to the subject of wells of all kinds. Iron pipe costs but a few cents a foot, where well sinking costs dollars, so that it is preferable to put down a pipe from the surface to the water supply, and the drive well came into its own.

The history of the driven well is most interesting, but here and now we may accept it as a fact, as it is an ordinary business proposition and that it can be used in every locality with every probability of success.

It eliminates *in toto* the twelve objections detailed, and we need only dwell on three. Cost nominal, as there is less labor and iron piping costs from 6 cents a foot up. A properly prepared pipe is easily and quickly driven into the ground. When deep enough, attach the pump and *factum est*.

If it be a dry well or water undesirable hoist the pipe and try it in another place: the only expense the small amount of labor needed in sinking the pipe and hoisting it up again.

It would be, of course, needful to do some experimenting as to location before going into much expense, but this question is generally solved by the well digger.

A Pure Supply.

Since air and water-tight pipe reaches from the pump to the water, there can be no seepage, and though it went through a bed of bacteria they could not enter. As they cannot live deep below the surface, and even did they gain admission accidentally, they could not live in the sterile waters in underground water basins.

In some limestone districts there is the possibility of tainted water sinking deeply, but it is exceptional and can be provided for.

The Cellar Well.

Hence the well can be driven in the cellar or inside the house walls with no fear of frost or contamination, and the kitchen pump and water supply placed where desired at comparatively little expense and in need of no supervision.

In my own case, after experience in the use of a pipe leading from the outside well to a pump in the kitchen, I decided on trying the driven well. The first one I put down in the conservatory over 25 years ago, and it has never received attention nor care except new leather valves and suction lining for the pump, and it is just as good in every way as when put down. Putting it down was but a forenoon's work for a couple of men, as we had not to go down more than 14 to 16 feet.

About 12 years ago I put down one in

the cottage, and it has been in constant use and never required any care, and about the same time put one down in the cellar of the residence, and though not much used lately it is as good as ever.

Having the spring of water and the facilities for a hydraulic ram, this has to some extent displaced the wells, yet the three driven wells are as fit for duty as ever.

The details and construction of driven wells are purely an engineering question, and being one of the industries of the day it need not here claim farther attention.

In many of our villages and small towns where there is no public water supply the driven wells can eliminate the other kinds unless in some exceptional locality.

The town pump and the house pump in thickly settled communities should not only be available and admissible, but desirable, while running no risk of a breach of sanitary requirements except where geological conditions such as too pervious strata or rock fissures would prevent.

We may safely say that pure water can be at the command of every one in every locality as far as known. Should exceptional conditions develop they can be disposed of on their merits.

Urban Water Supply.

Where a good gravity or other supply is easily available, that settles it; but these conditions are too often wanting. The preceding argument applies to towns outside public water supply.

Where a water supply for public service is demanded, we must either get good water or try to purify the tainted, and the experience of the day is that purification, though theoretically possible in practice, it is questionable, and each succeeding year increases the difficulty.

We must fall back on the other horn of the dilemma—avoid tainted and only use pure water, but how can it be obtained? We have decided on its practicability for detached houses, but for a city it is another matter. Let us discuss it.

This mother earth of ours is not only a most wonderful study, but is more wonderful in what she furnishes for her inhabitants.

Within her bosom are not only everything we can think of, and doubtless much of what we cannot even conjecture. Ask for anything we want and complying with fixed laws, she gives us waters, potable and medicinal, oil and gas, coals and minerals of all kinds, and from the deeper springs gives us radium emanations of untold value. If surface waters fail, why not explore and resort to underground reservoirs. They are very freely distributed and in most unexpected places — from the plains of Dacota to the desert of Sahara.

Without discussing imaginary schemes let us take a town in any valley or on a lake or river shore. The water in the stream is below the ground water level in the district, and if it be not desirable to use the water of the stream, let us go to its untainted source, a sufficient distance from the stream to avoid its contaminations.

To further explain my idea. Let us assume the water of Lake Ontario, near Toronto, is of questionable purity and needs filtration (with all the expense and labor that this implies). Can we not get all the good water we want, and never touch Lake Ontario, though using its waters.

Let us go back from its shores some distance and put down driven wells — far enough below the level of the lake — need there be doubt that water would be obtainable in quantity and purity from the lake and adjoining territory? Or would it not be quite practicable to lay off a sufficient lake area and put down pipes to a depth sufficiently below the lake bottom to give a filter bed that need never wear out? And this the more as the water would come from the deeper and purer layers while passing through a filter bed of any desired depth. In any case, we can insure the purity of the water, as it comes practically from a germ-free source and is filtered as well. This filter bed may be any size wished for, and obtained at no expense for purchase, maintenance or repair — it will not wear out.

The engineering details — size of pipe, depth to be driven, supply furnished by each unit — are easily capable of solution. Extension would merely be so many more units.

The cost of pumping, distribution, etc., need be no more than now obtains, and the question of good water supply is not only solved for the present but the future as well.

In the middle States (United States) communities up to 18,000 people have been and are thus supplied.

The artesian well (a rock-pierced driven well), where the saline contents of the water are not objectionable, is specially desirable, as the water comes from deep and distant sources.

Different methods have been adopted in different localities to obtain potable surface waters, such as infiltrating galleries, cribs, shallow wells along the banks or within the bed of surface streams. Lately "well strainers," perforated pipes laid horizontally and beneath the surface of the bed of the stream, so as to obtain filtered waters. This subject is an engineering question in which many factors must be considered. The population to be served, the geological formation, etc., and no two places may be alike.

That the ideas above outlined are not creatures of the imagination, I would refer to the city of Brooklyn, N.Y. Now they are to get an extra supply by tunnel from the Adirondacks, but for the years past they depended on an underground supply, there being no sufficient lakes nor rivers on Long Island. A series of driven wells were put down and connected up with the pump, that sent the water where required. If one well needed repair it could be cut off the general supply, attended to, and switched back again. Brooklyn had no tainted water supply, no filters to build or clean; a minimum of expense and but little machinery.

Two years ago when in Mobile, Alabama, I noticed a special installation. Mobile has an exceptionally fine supply of pure spring water obtained from adjacent hills, but this was not depended on by a large ice manufacturing establishment—they wanted a large supply of pure water, and for condensing purposes at as low a temperature as possible.

Although the Alabama River (a large untainted stream as rivers go) was only a few hundred feet distant, they very judiciously decided to put down driven wells alongside the factory, as not only least costly, but giving a good water at relatively low temperature.

I followed their construction with more than ordinary interest. They drove down rows of four-inch iron pipe about ten feet apart to many feet (about 40) below the river level, each pipe well being connected to a common main, and this to the pump. The whole plant and unlimited water supply were all within the precincts of the factory.

The deep bed of sand driven through was some of it very fine, requiring special contrivances to prevent it clogging the entrances and filling the pipes, etc., but these are engineering points we need not discuss here.

The object of this paper is to outline methods by which pure water for any town, village, or detached house can be obtained at a minimum of expense for installation and maintenance, that need not become inefficient by lapse of time, surroundings, increase of population or the establishment of factories. And where a pure gravity supply is not available the driven well is the only reliable means that can secure the desired results.

There are many details worthy of elaboration, but it would unduly extend this paper. It is not assumed that there is any novelty disclosed other than an index of up-to-date conditions which should be generally known and acted upon by health boards and sanitary authorities; but judging by the conditions that prevail, and unsatisfactory results of the efforts made for amelioration of the evils, a general ignorance appears to be very prevalent.

Pure water at a minimum of expense for installation, maintenance and extension when needed, should be at the command of any community or individual; and we would like to enlist the combined efforts of hygienists and engineers to extend to some extent their field of vision and exploitation so they may find what they are in search of.

In the meantime let every one know that a suspicious water can be fearlessly used if treated with chloride of lime (bleaching powder) as detailed—*supra*—or if it be boiled for 15 minutes.

In the Report of 1895 p9 of the University of Illinois, U.S.A., on the Historical and Chemical survey of the waters of Illinois, data is are given of the examination of thirty-six wells—of which eighteen were driven or bored—fifteen were dug wells and three were both dug and bored. All the driven or bored wells were satisfactory, unless where now and then they were too highly mineralized. The dug wells were good, bad and indifferent, and all liable to contamination, which included the three that were both dug and bored. The conclusion was "that driven or bored wells, unless waters were too highly mineralized, are much to be preferred to the dug wells.

VENTILATION OF WORKING ROOMS

In which a good deal of Heat is Radiated—such as Engine Rooms, Press and Printing Rooms, Bakeries, and Kitchens.

BY W. A. EVANS, M.S., M.D., LL.D., D.P.H., CHICAGO.

Engine and boiler rooms are warm because of the fires within them. They do not need to be kept warm, but it is difficult to keep them otherwise. The relative humidity in them is high. They are dusty to about an average degree. There is usually a good volume of air entering the room and a fair amount of air movement within them. As the fires must have a good air supply in order that they may be efficient the stokers and engineers usually get a good deal of fresh, cool air.

Press rooms are warm because of the fires in and near them. They must be kept warm in order that the ink will run well. They are usually dusty—generally there is only a small intake of air and there is not much air movement within the room. The men working in the room are not infrequently quite crowded. They sweat freely. They catch cold easily. Their consumption and pneumonia rates are high.

Bakeries have ovens which make it difficult to keep the rooms cool. Most bakeries do not have a separate sponge room. During the hours when the sponge is setting the sponge room must be kept warm. Bakeries are usually badly crowded. There is much dust. The dust contains gluten and therefore is more harmful than starch dust. The humidity is high. The kitchens are warm by reason of the fires within them. Kitchens for hotels and restaurants are usually dirty. They are practically always overcrowded. The humidity is high.

In the case of the last two illustrations there are aesthetic reasons why the conditions should be rectified. It is not pleasant for the consumer to think of sweat pouring into the soup or of hot, sweaty, dirty hands handling bread. The factors combined make directly and indirectly against the greatest wholesomeness of the product. Nevertheless the most important consideration is the health of the workers. It is quite generally agreed now that the harm of improper air results in great measure from the heat thereof. Humidity which is too high or too low is harmful. Carbonic acid, carbon monoxide and other gases are of consequence. Dust and bacteria are also harmful agents.

In the air borne infections dust and bacteria are of great importance and heat and moisture are less important. In the air-caused conditions, including susceptibility to infection, heat and humidity become the factors of greatest consequence.

A hot room which is humid is very oppressive and debilitating and precipitates colds and other forms of infection. A hot room which is too dry is a factor in sub-infections and latent infections. If the temperature of an inhabited room is cool the expired air will rise out of the breathing zone in time to escape the next inspiration. If the air of the room is over 70 degrees F. the expired air will remain in the breathing zone and be inhaled in a state of concentration. The air in the aerial envelope is befouled and warmed by the body. If the air of the room is below 70 degrees F. this aerial envelope air is changed. If it is above 70 degrees F. the aerial envelope remains befouled. Considerable difference, say 30 degrees F., between the temperature of the human body and that of the room air is a great force in purifying the breathing zone and the aerial envelope. Hot rooms are therefore unhealthy. However, the heat itself is not the most important factor. It is that the heat annuls a purifying factor. A warm room can be made healthy if the air is otherwise moved with sufficient force and thoroughness. Every man needs the stimulus which comes from having something cold strike his skin—always provided the volume of cold striking and the amount of heat abstracted is not beyond the compensating powers of the body. This stimulus of cold is the function of a cold water bath or a cold air bath in the morning. A man in a cold atmosphere will do a little more work or a little more study than a man in a warm atmosphere. But

these are questions of efficiency rather than health.

Men working in warm air will not be unhealthy if the air is kept fresh enough and if it is circulating freely enough. If the force of difference in temperature is not operating to cause currents of air within the room then it must be supplied by fans.

In introducing fresh air into a work room where the temperature is high it is necessary that the air should be warmed before it gets to the parts where men are at work. During certain hours bakers work very hard and make a great deal of heat. Their skin must be warm in order that evaporation and radiation may rid their bodies of that surplus heat. If cold air strikes their skins, the blood is driven away, perspiration is checked, and great harm and discomfort follows.

The fresh air must be warmed in cold weather. The difference between the temperature of the incoming air and the temperature of the room can vary a good deal, dependent very much upon the method of introduction. It may be as great as sixty degrees, but this is seldom allowable. If the air is introduced near the ceiling and there are no nearby workers such a difference would be tolerated. Fresh air introduced 50 degrees F. below the temperature of the room would probably fall to the floor and heat slowly. If men are at work anywhere near the inlets the cold air would probably fall on them. The men would plug the inlets and do without fresh air, except that which leaked in. Therefore unless there is much waste room and men can always be kept well away from the inlets the incoming air should not be more than 30 degrees lower than the room temperature. The ideal arrangement is to use the surplus heat of the room to heat the incoming air to a temperature within 20 degrees of the temperature of the room, and to introduce the fresh air near the floor. Whenever it is found that the air movement in a room is not brisk enough to bring comfort fans should be added to the equipment. The reference here is to fans which bring about internal currents and not to fans located on the inlet or outlet ducts. In small installations the surplus heat of the room should furnish force enough to move the air in the ducts. In large installations blower fans will certainly be needed. If the work room is in a cellar the question will be purely one of heat abstraction. If the work room is above ground there may be enough wall and window chill and leakage to make some radiation a necessity. If such radiation is required it should be placed near the windows and the fresh air should be passed through it. Such a room should have windows on more than one side. The suction force of heated air is not as great as the force of wind of say ten miles an hour. The windows which would be on the lee side of such a room would act as outlets rather than inlets. The inlets should then be opened on the wind side or neutral side of the room.

This, however, is of secondary importance. The main questions are—How can the heated air be removed from the room? How can the fresh air be heated before it is discharged into the room? How can the warm air of the room be circulated?

As a basic proposition the warm air should be removed by outlets which open from the room at the ceiling. In these outlet ducts there can be carried the inlet ducts, thus warming up the incoming fresh air. The fresh air ducts should discharge into the room, preferably near the floor and usually behind or around the source of heat in the room. Electrically driven fans should be abundant enough to keep the air currents active. Sometimes this arrangement can be advantageously varied—for example, in a bakery the hot air should be taken out right over the ovens and the fresh air put in around them, so that having been warmed it will be driven out directly into the room. As the cost of heating the fresh air is usually the reason for insufficient ventilation, the proper ventilation of superheated working rooms should be universal. There is no reason why such places should not have a great surplus of fresh air since there is an excess of otherwise waste heat with which to warm it. The requisite is that the inlet and outlet ducts be so arranged as to utilize the waste heat. The standards of volume of air per inhabitant, cubic feet of air space per inhabitant, air currents, freedom from dust, humidity, and sunshine are relative. If one changes for the worse no harm follows if the others im-

prove to a compensating degree. Places in which the temperature must be kept too warm must be superior to the standards in other hygienic qualities to compensate. Such places require more than the average amount of air movement through fans, as has already been indicated. As the temperature and humidity standards are lowered the sunshine standard must come up. Bakeries and kitchens should never be in basements or cellars. Engine rooms and boiler rooms can be placed there without great harm, because the volume of air must be large in order to get boiler efficiency. There is no wall leak or wall chill in cellars and basements. Therefore heat abstraction and control of currents could be made effective. It is possible that a way could be worked out for satisfactory cellar occupation for printing presses.

I do not think that the crowding, dirt, dust, humidity and heat of bakeries and kitchens can be overcome enough in cellars and basements to warrant us in losing sunshine. Places which are unduly warm must compensate by having a high standard of cleanliness. High temperature increases the susceptibility to infection, and therefore spitting on the floor and dusty air must be prevented. The hands of the workers get very dirty in printing and stereotyping establishments. This is of great importance in these trades. On the hands of the printer doing ordinary work there is a good deal of antimony —a poison. Decalcomania printers get brass on their hands. If the hands are not washed before eating or smoking slow poisoning is liable to occur. Therefore such establishments should have an excess of lavatory equipment—a compensating raise in a standard. As any standard falls other standards in the same group must rise or harm follows.

CHILD WELFARE AND THE CITY

BY WM. H. ATHERTON, PH.D.,

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"This boy is Ignorance. This girl is Want: Beware them both and all of their degree, but, most of all, beware this boy, for on his brow I see that written which is Doom, unless the writing be erased." —"A Christmas Carol," Charles Dickens.

Mr. Ebenezer Scrooge was a sweezing, wrenching, clutching, covetous old sinner. A type of the rich and selfish merchant of London in the middle of the 19th century, he cared as little about his fellowmen, civic pride, civic loyalty, or civic responsibility as any man. He was an oyster by choice—a citizen by accident. It is true he paid his taxes, because he had to, but he never opened his heart or his purse strings to anything over and above the forced requirements of the law. Social problems or the calls of humanity left him untouched.

When others would call on Scrooge to help the poor with a donation at Christmas time, he would caustically ask whether the prisons and the workhouses, the tread mill and the poor law were still in full working order, because "I help to support those establishments—they cost enough and those who are badly off must go there."

"But many can't go there, Mr. Scrooge, many would rather die." "If they would rather die," said Scrooge, "they had better do so and decrease our surplus population."

This Scrooge philosophy is hardly the popular doctrine of to-day, thank goodness, in the twentieth century city life so admirably visioned for us by the Hon. H. B. Macfarland.*

Scrooge's Conversion.

But, after an enforced and strenuous course of ghostly visitations at midnight on

A lay sermon given before the Annual Convention of the Union of Canadian Municipalities held in August, 1911, at Quebec.
* Late President of the Commission for the District of Columbia, U. S.—Speaking at Quebec.

Christmas Eve, Scrooge found social salvation and a new life in the social problems around him through his new-found interest in Little Tiny Tim, a deformed, crippled child, the son of his own ill-used clerk. A little child opened his heart to his social duties, and he became a good, practical citizen, for his biographer, Dickens, tells us, "Scrooge became as good a friend, as good a master, and as good a man as the good old city knew, or as any other good old city, town or borough in the good old world."

The Children, Ignorance and Want.

One of the object lessons which Scrooge had to study before becoming a good citizen was the following:

The spirit of reform brought forth for Scrooge two children from the slums, "wretched, abject, frightful, hideous, miserable." They knelt down at the spirit's feet and clung upon the outside of its garment.

"Oh, man!" cried the spirit to Scrooge, "Look here! Look! Look down here. They were a boy and a girl, yellow, meagre, ragged, scowling, wolfish, but prostrate, too, in their humility. Where graceful youth should have filled their features out and touched them with its freshest tints, a stale and shrivelled hand like that of age had pinched and twisted them and pulled them into shreds. Where angels might have sat enthroned, devils lurked and glared out menacing.

"Spirit!" cried Scrooge. "Are they yours?" "No!" answered the spirit of Scrooge's reformation, looking down upon them, "they are Man's! And they cling to me, appealing from their fathers. "This boy is Ignorance. This girl is Want. Beware them both and all of their degree, but, most of all, beware this boy, for on his brow I see that written which is Doom, unless the writing be erased."

"Deny it!" cried the spirit, stretching out its hand towards the city. "Slander those who tell it ye! Admit it for your factious purposes and make it worse, and abide the end!"

"Have they no refuge nor resource?" cried the now repentant Scrooge. The spirit turned upon him, with his own words, "Are there no prisons? Are there no workhouses?"

* * * * * *

City Officials and the Child.

Gentlemen of the Canadian municipalities; mayors, aldermen and civic officials, you know to whom the accusing hand of the spirit of reform was pointing when directing Scrooge's gaze to the city—it was to those, who in the 19th century city, held responsible positions in regard to the children of the city such as you hold to-day.

But if the spirit of reform came unto us to-night he would not be so stern. The modern city official does not slander the humanitarian who tells him of the city's ills. The spirit of philanthropy and charity is listened to these days.

In the twentieth century city all are vieing with one another to do something for their neighbour, especially the poor. There are not so many Scrooges nowadays —although he is not unknown. A great wave of civic altruism is traversing the world. It is being experienced in a keener and cleaner interest in civic government by the ruled and rulers, and to-day more than ever are practical means being taken to ensure that preventive remedies should be applied to our social evils, so that in the future our prisons, our reformatories, our hospitals, our insane asylums and our cemeteries shall not be the main solution of our child-life problems.

But let us not be pharasaical and draw no lesson for ourselves from the picture sketched by Charles Dickens of the degradation of child life in London in 1843.

In this fair land of Canada have we no children called Ignorance and Want? Have we no slums which are fostering centres of disease, inefficiency, sin, poverty, ignorance and want for the young of our race?

This last year we have been visited by several distinguished city planners and students of social problems from England —Mr. Henry Vivian, M.P., the expert on model dwellings for the working classes; Mr. Raymond Unwin, an author of undoubted merit on city planning and the architect of the First Garden Suburbs of Hampsted; Mr. Thomas Adams, chief inspector under the "Town Planning Act" of the local Government Board of London, England; and others.

What pained and surprised these men from the old country was that already in this new world, this Canada of ours, this

land of promise, we are reproducing the evils of the old world, and that the slums of London are being rivaled and even surpassed in our midst.

Similar testimony of the alarming conditions existing in our Canadian cities has been lately published by the Conservation Commission of the Dominion Government in the pamphlet on "Unsanitary Housing," by Dr. Hodgetts, medical advisor to the commission. We can no longer doubt that already bad environment is being created in our city life, and it needs no prophet to foretell that out of the Ignorance of the rulers and of the people we shall rear up our quota of anemic, stunted, inefficient, unproductive children, whose end will be Want unless the writing of Doom be erased.

The *remedy* is *efficient house-and-town planning*.

For the centres of consumption and infantile mortality, which are the fertile cause of our death roll, always occur in the poor and congested city districts or badly planned suburbs of the artisan classes. At least, it is so in Montreal, and there in consequence we have the highest infantile mortality on this continent.

Do you know, that out of every hundred children born in Montreal in the year 1909 (the last official blue book I have seen) 29 perished in the first year; that out of the total mortality of the people 54.92 per cent. was caused by the deaths of children under five? Do you know that in Montreal during the month of July of this year (1911) out of 1,419 deaths 1,033 were those of children under five (*i.e.*, 72.92 per cent. of last month's mortality); that out of 6,297 deaths occuring in Montreal between Jan. 1 and July 31, of this year, 3,482 were those of children under five? Ignorance of the laws of feeding, no doubt, is greatly to blame for this, but the chief cause is the unhealthy conditions inseparable from overcrowded districts, which again is the result of a badly planned city.

Is it a matter of congratulation that we are welcoming to our cities hordes of inefficient people from southern Europe, brought here by Government subsidy, while a white-robed army of potential citizens of our own flesh and blood are dying at an alarming rate from preventible evils which a subsidized campaign of hygienic education or city planning could remedy?

What consolation to us should it be that, while we are becoming rich and while we desire our cities to rival in greatness the capitals of the old world, the children, the real wealth of the people, are falling thick as leaves that fall in Vallombrosa!

And of the rest of the slum children that survive the pruning of the first five years are we to say that these are always sound in body and mind, undeteriorated?—that they are being brought up in surroundings that will turn out efficient men and women for the struggle of life, capable of rearing in their own time a strong, intelligent and upright Canadian race? We would like to say so, but King Consumption and the Governors of our jails, reformatories and insane asylums bid us pause before we make reply.

Gentlemen, it is your blessed privilege to erase the doom that is written on the foreheads of so many of our city youth by the wise and faithful exercise of those powers put into your hands, as administrators for the common weal.

Not only can you insist that every city department under you, such as that of health, sanitation, water, milk, food and factory inspection; the lighting, the ventilation, the cleaning, and the scavenging of your cities, shall be thoroughly up-to-date and efficiently administered—but you will boldly remove the predisposing causes that have in the past caused bad city environment and slums and produced a debilitated population, whose children will also suffer from lowered physical vitality and lessened mental combativeness in the battle of life.

This you can do by instituting, with bold and intelligent foresight, house and town planning movements in your cities, based not so much on the æsthetic embellishment of your neighbourhood, not so much on the provision of civic centres or expensive boulevard schemes, as on the welfare of the children of the working population.

You will do this the more surely if you will remember that life is to be lived more and more in cities, and that in consequence you must import the country into your midst by providing that there shall be ample light, space, air and green spots even in the industrial centres, where the poor must necessarily congregate to be near their bread-winning occupations.

This is the first law and ABC of modern city planning.

You will thus spread the people out, you will give them parks, playgrounds and breathing spaces at frequent intervals, and doing this you will avoid slums. *Slums you must not tolerate*, you must abolish them directly or indirectly by reconstruction or prevention. As Mr. John Burns has said, "Motherhood, childhood, youth, society, and the race demand the abolition of the soul-destroying slums."

To help more effectually in this you will early take steps to grasp greedily and secure for your children and their children's children *all the available land within and without* your cities while it is reasonably cheap, for the want of this elementary precaution, it is, that has made city life in the past so productive of death and disease to the toiling population.

Thus by controlling beforehand the growth of your city and its suburbs and arranging for its expansion according to the true needs of the people—which are the health, strength, morality of the working classes—you are moulding your cities and your cities are not moulding or crippling you.

In such a twentieth century city the boy Ignorance and the girl Want will not be blots on your civilization.

City Associations and the Child.

"Spirit! are these children yours?" "No! they are Man's and they cling to me appealing from their fathers."

It is the spirit of humanity again speaking.

It is undoubtedly the first duty and inalienable right of parents to tend their children themselves and to give them every chance of a full development of body and mind, but when parents neglect this strict duty, either through wilful and vicious ignorance or more frequently because of lack of sufficient knowledge, the children then have a right to appeal from their fathers to the spirit of humanity and civilization, as interpreted by the state, the municipality, and the more blessed of their fellow-citizens.

Civilization means that we are our brothers' keepers and we must bear one another's burdens. Nowadays it is coming home very forcibly that those who have been more endowed with the talent of health, wealth, and knowledge are but stewards, who must make use of their opportunities for the common good. Living as we do in social life for mutual help and protection and a fuller enjoyment of life, where some are weaker in intellect, strength or riches, the better endowed are bound to give of their superfluity to the needy. Hence there have arisen many organizations of private citizens in every walk or profession of life who wish to give some of their time, service and money for the good of the whole. These have different names, such as city clubs, associations for embellishment, for social service, social welfare, etc. Some are formed in educational, humanitarian, æsthetic, or philanthropic, others in civic bodies; but all with the intention of grappling with the social problems, of our city; of promoting better, cleaner, healthier municipal life; of finding out the causes of the ills of society, of remedying and reforming them by legislative means.

In the past all failure in city life was apt to be placed at the door of the city hall, but nowadays citizens realize that they get the government they deserve, and that they themselves must contribute more of their own direct assistance in the government by taking a share in the many burdens and problems of municipal life, which are too arduous and complex for the city representatives unaided. Hence there have arisen many volunteer organizations of educated men and women for this purpose. It is to the mutual interest of city authorities and such bodies to complement and supplement one another harmoniously—both should shoulder the burdens of responsibility in the household of the city; the Organizations, by awakening the civic conscience and educating the people, and starting movements for enlightened reform, and the City Halls, by concreting the enlightened public opinion thus formed in wise legislation and carrying it into execution by the effective administration of the law.

May I in my capacity as the representative of a civic organization of private citizens of the type alluded to, appeal to you to encourage the growth of more on these lines throughout Canada. I hope the time is not far distant when we shall be able

to have federations of national Canadian organisations of expert, but unofficial, bodies—corresponding to the great American associations, viz., the National Municipal League, which views municipal life from the financial and administrative side, and the American Civic Association, whose aspect is mostly æsthetic and humanitarian—meeting occasionally in joint convention with official municipal organizations such as yours here to-night. The collaboration of such like Canadian societies with the Union of Canadian Municipalities, representing the city halls of the Dominion, would be of incalculable worth for our Canadian municipal life.

With such a powerful combination of many divergent minds, interchanging ideas and working for unity through variety, at work upon the solution of our social problems—the best official and volunteer service available—we could hope for much progress.

How quickly could municipal movements of national import be seized upon and embraced over the Dominion by the representatives—official and unofficial—of the various cities meeting one another and comparing experiences by public and private conferences!

Your kind invitation to me as a lay municipal worker emboldens me to illustrate concretely what I mean, by placing before you a movement which, while originating in Montreal, is deserving of adoption throughout Canada.

A Child Welfare Movement for Canada.

We private citizens of the City Improvement League of Montreal and its associated societies, stirred by the sight of the annual slaughter of our infants, and moved by their appeal to come to the aid of their parents, have been diagnosing the causes of our city's ills. Among the chief predisposing causes of our infantile mortality we find that of defective house and town planning. Therefore we have tried to secure a city planning commission established by the Legislature of Quebec for the Island of Montreal, but at present we have experienced delay. Nevertheless, we have not abandoned our purpose of agitating for it. Meanwhile, we have been inspired by our recent city survey investigations, which impressed upon us the relation of infantile mortality with house and town congestion, to take up the case of the child as the immediate basis of our city planning propaganda—for we are convinced that child welfare and city welfare are synonymous, for as has been said, "The indefinite improvement of humanity and the cause of the little child are inseparably bound together."

Again, we believe with Dr. C. W. Elliot, who visited us last November, that "if we are hoping to reform mankind we must begin, not with adults, whose habits and ideals are set, but with children, who are plastic. We must begin with the children in the homes, the streets, and the playgrounds," under the auspices of "the child."

In this way, we find that we can present the city planning, housing, and parks' and playground movements to the public by a new but solidly humanitarian and powerfully attractive argument.

We found that our view was shared by many organizations in the city and a movement started under the auspices of the City Improvement League, the Association St. Jean Baptiste, the local Council of Women, and the ladies of La Federation Nationale St. Jean Baptiste, and backed by all the leading organizations of the city and engaged in by all the prominent medical men, lawyers, architects, educationalists, business men, clergymen, and others, of all creeds and racial origins, giving freely of their expert experience, who have combined to study for a year the conditions and problems of child life and early youth and to crystalize their results in a *Child Welfare Exhibition* to be held in October, 1912, on the lines of those held lately in New York and Chicago, and shortly to be repeated in St. Louis and other American cities.

It is found that such exhibitions, together with the propaganda of an educative campaign connected therewith, are invaluable in the promotion of a right public opinion and in the suggestion of well-directed reforms which cannot but be of avail for parents, experts, and rulers alike.

To briefly indicate the scope of the projected Montreal exhibition.

Starting with infant life and prenatal influences, the section of Child Hygiene will illustrate the causes and remedies of infantile mortality and will then pass on to cover the rest

of the child's health till early youth. The exhibition section, entitled "City Environment and the Child," affords the opportunity we have been seeking of extending a propaganda for the housing and town planning movements along child welfare lines. The "Home of the Child" is now entered, and there is demonstrated the advantages of the economical and sound furnishing of the artisan home. The "School life of the Child," in all its forms, with its scholastic and industrial curriculum, its furnishing, its ventilation, and other hygienic accessories, comes next, to be followed by a section provided by the Churches on the work that is being done in the "Religious and Moral formation of the Child," who is to be planned to dwell in the city, which is to be not only healthful and beautiful, but also holy. The "Social life of the Child," its club associations, its recreations indoor and outdoor, Child Labour and Juvenile Crime; each have their special sections to illustrate the intellectual and spiritual training of the child. What is being done and can be done for the Abnormal child—the blind, the crippled, the deaf and dumb, the mentally defective will all be illustrated. And finally there will be a section on general Private and Public Philanthropy in its relation to the child."

My *first* point in giving you this slight sketch of the scope is to show you, in line with my subject, "Child Welfare and the City," the wide field of usefulness in which the city official or the private citizen is called upon these days to labour, if he would satisfy adequately the call of the city children, and my *second* point is to suggest that such educative movements and exhibitions on behalf of the child need the support and co-operation of the Municipal, Provincial, and Dominion Governments.

We assist, financially, exhibitions and movements that promote the growth of our commerce and industries, the rearing of a good stock of cattle, the conservation of our natural resources and our crops;—have our governing bodies thought as yet sufficiently of assisting movements that will assist the culture of a better crop of citizens? It would be easy to loud you with statistics proving conclusively the economic value of every healthy child to the state and the economic loss through the upkeep of our jails, reformatories, insane asylums and other hospitals, which are maintained to repair the errors contracted by the ignorance of the past of the laws of health of body and mind governing the rearing of a nation's children.

In placing before you the project by which we citizens of Montreal are endeavouring in our citizen associations to fulfil our part of the city's duty to the child, I trust that your cities will contribute to make our venture on a Child Welfare Exhibition a success by sending us exhibits indicative of your work in the same field, or by promulgating in your own centres similar educative campaigns for the better, physical, moral and intellectual Welfare of our Canadian Youth, so that planned and trained in all things that render them fit for the exercise of a full, abundant life, they may maintain Canada's aspirations in the competition for place and power among the nations of the earth. The nation that cares most for its children will be the greatest nation, and the nation that rears up in its slums the children of ignorance and want will eventually find its place among the lowest—a consummation we can never contemplate for Canada.

THE BREEDING SEASON IN MAN

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That there are certain periods amongst all animals during which the function of reproduction is performed is a matter of common knowledge. But that man himself still shows some indication of such a season has only of late years been no-

tired. It is a well-known fact that animals in the wild state and those in captivity differ very widely in their sexual habits. Whilst confined and regularly fed, there is a marked increase in the number of œstra in any period, though conception even under such conditions seems to occur more readily at that time which corresponds with the true breeding season in the wild state. This epoch in the life of the female is decided by certain conditions favorable either to herself or her offspring.

It is well known, and much deprecated by the medical profession, that most births occur at night. The object of this is obvious. It is essential for the well-being of the female that she should not be disturbed in such a process, and further, that she should be protected at that time, when she is incapable of defending herself. We can imagine, other things being equal, that, as the winter nights are longest and darkest, those types which happen to choose this period of the year would be the most likely to bring forth their offspring in peace and hence survive.

With respect to the infant, this time is not the ideal season for its first days of life, even though we know that whilst in such an immature state it possesses great resistance to cold. From general considerations the late spring would be considered as a more suitable period than the winter. The conditions of its life should be sufficiently unfavorable to act as a mild stimulus to growth. We can easily conceive of a surfeit of food or a want of sufficient variation of temperature leading to a soporific effect on the one hand, or actual starvation and exposure, producing an untimely death, on the other. In the spring, the conditions appear to be neither too easy nor too severe. Taking these two factors into consideration, we should define that period of the year corresponding, in these climates, with January, February, and March, as the most suitable for birth with savage man. Supposing man were a monœstrous animal, this would bring the female in use in the previous April, May, and June. If we agree that civilization has had the same effect on the human female as captivity and domestication on other animals, then the menstrual periods must have occurred much less frequently in prehistoric times, a special season being allocated for the production of young.

The question we have before us may be put thus:—Is there any indication at present of such a season, and if so, are there any differences in the children born during this period from those born at other times?

The first query we can answer in the affirmative, as the data collected by various observers, and from an analysis of our personal instincts, present a series of facts that amount to proof. Ploss* has shown that births were not equally distributed throughout the whole year, the greatest number being found in that month which typified the advent of spring in the countries concerned. Thus in Russia, Italy and France the highest birth-rates occurred in the first month of spring.

In Scotland, Haycraft found that colder months contained the greatest number of births, thus bringing the female into use the previous May or June. The May Day festival, as pointed out by "Frazer," in ancient times, was a period of great licentiousness, and we see, even now, in the crowning of the May Queen an essential tribute by the male to the sexual side of his nature.

In a town, the essential conditions underlying this periodic character must be, owing to the nature of the life led, as weak as modern customs can make them, and it is interesting to see if there remains in such a community any semblance to the more primitive state. The points of inquiry resolved themselves as follows:—Firstly, the distribution of the births over the whole year; secondly, the relative fertility of the female according to season; thirdly, the numerical sex relation; and, lastly, the power of survival. The facts on which I base my conclusions can be obtained in any health or education office—owing to the inspection of school children, the month in which the birth occurred being given with every inspection, so that anyone desiring to work out the facts of this interesting little problem may easily do so. My own fig-

* Das Weib. Leipzig, 1885.

ures are not very numerous, a few groups only being taken at random from a mass of material, and in consequence I have not divided it very extensively. In the majority of instances I have either taken quarters, to correspond with the seasons, spring, summer, autumn, and winter, or halves, firstly from January to June, and secondly, from July to December.

I scarcely think a more detailed classification is of much value, as the trait which we wish to delineate will not be confined too closely to any period. The town under consideration (Middlesbrough) has a population of 105,000, with a birth-rate of 32, and the rather unique position of 1,089 males per 1,000 females born, which, I think, is one of the highest for the country generally. The average number of births per month was 272. January, however, had the greatest number, 317, in the year 1909. The distribution in each quarter was as follows:—

	Males.	Females.	Male excess
1st quarter—Jan., Feb., March (90 days)	974	847	191
2nd quarter—April, May, June (91 days)	922	858	
3rd quarter—July, Aug., Sept. (92 days)	875	784	115
4th quarter—Oct., Nov., Dec. (92 days)	856	831	

The greatest numbers occurred in the first quarter of the year, but on analysis this excess consisted mainly of males, and the females reached their maximum in the second quarter, though the differences are small. The variation amongst the males, according to season, appears to be greater than amongst the females, and this is an interesting point in connection with sex determination. Dividing the year into three periods, the figures read as follows:—

	Males.	Females.	per 1,000 Males Females
January, February, March, April	1,289	1,134	1,136
May, June, July, August	1,181	1,101	1,072
September, October, November, December	1,157	1,085	1,066
Total	3,627	3,320	1,093

In the months December and November, the females were in excess of the males. In all others males were more numerous. Most marriages occur in the early part of the year, especially about Christmas and Easter, Lent, a period of scarcity, coming in between. These periods of excess would tend to decide the time the birth should occur, still, the same impulse that leads to mating at any particular time may be dependent on those physiological conditions which render conception more likely. Thus, 550 first births occurred from January to June, and 400 from July to December, which might be attributed to the period of marriage, though the desire for mating and the likelihood of conception are probably synonymous.

The fertility of the females appears to vary considerably. Thus out of over 500 inquiries I found that 46 conceptions occurred in the first half of the year, at an interval of under two years from the previous birth, whilst in the second half there were only 34, showing that many of the menstrual cycles in the summer and autumn are not followed by true ostra, and hence conception does not occur. Further, the average interval from birth to birth in the first and second quarters was found to be 30 months, and in the third and fourth quarters 31.5 months, a difference not great, yet significant. It would be quite relevant to suppose that children born at the true breeding season would be in some way different from those born at others, and that the creation of a new life at the time, for which through various causes special adaptations have been made for that purpose, would be more fitted to meet the needs of life. To follow up a long series of lives through a period of time is the best method to elucidate such a point. That is a tedious and difficult task, and was not

the one adopted in the present instance.

In any health or education office we possess, as I have said, vast series of data, giving the age and sex distribution of birth in the various periods of the year, and it is this source that I have used. I have divided them into two sections only — January to June, July to December — and in tabular form they may be given as follows:—

Born in	At Birth		At 6th year		At 11th year	
	No.	Per M.	No.	Per M.	No.	Per M.
January to June	3,600	519	2,320	559	3,040	597
July to December	3,340	481	1,860	441	2,060	403

It will be seen from this table that children born during the first half of the year seem to have inherited more vitality than those born later. It might be contended that it is due to the more suitable seasons coinciding with the more immature periods of life, and is responsible for the difference in the number surviving. This may be so, still it does not militate from the fact that any cause leading to the production of the young at a certain period, and hence producing a greater fitness on the part of the mother at that time, must influence the probable survival of the offspring. So, whatever is the factor underlying these differences, it comes eventually to the same thing.

I think we may therefore conclude that there is good evidence of a special season for breeding in man, and that the offspring produced at that time are likely to be better and healthier than those produced at any other, and further, that the male excess reaches its maximum at the corresponding season, a fact which might be made use of for the benefit of society, for at the present time males are required. It is curious that in that class where families are the smallest, and in which inhibition of self and control of sex instinct is greatest, there is a marked female excess. It is scarcely unreasonable to expect that that power which has been utilized so successfully to limit number, might also be used to regulate the kind and fitness of the next generation, as there is a great demand for males in the more prosperous walks of life.

NEW METHODS IN DIAGNOSIS AND TREATMENT OF INFECTIOUS DISEASES

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It is not the purpose of this paper to present any general study of so large a scope as the title might indicate, but only to submit for consideration a limited number of diagnostic methods of relatively recent development, to lay stress upon their zone of application; and to point out their valuable contribution to a positive knowledge of pathological processes and their consequent field of utilization in practice. It will also be my effort to indicate the wider use of such methods than for diagnostic purposes only; in some cases I shall point out with insistence upon the value of such methods in prognosis and in the control of therapeutic effort and effect.

The imperative importance of early diagnosis of tuberculosis is established. We are not here interested in the mere determination of the bacilli of tuberculosis in sputa or excreta, but in methods that shall unmask a beginning invasion of the organism of these bacilli: the precocious diagnosis of a tubercular infection. There are various methods which reveal such infection in its initial stages with great reliability.

The use of tuberculin as a diagnostic agent dates from Koch's failure to establish its value as a general means of cure. It was found that a hypodermic injection of a minute dose of tuberculin pro-

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voked a marked and prompt rise of temperature in a tuberculariy reacting organism. The exhaustive studies and perfections of this use of tuberculin have completely demonstrated its value as a diagnostic method, but have also revealed dangers and disadvantages of sufficient gravity to confine its application to specially trained observers.

It may be said in general terms that nine out of ten individuals infected with tubercle bacilli will evidence this fact by their reaction to the injection of tuberculin, almost immediately upon the establishment of such infection in the organism, and throughout the entire duration of the organic resistance to invasion. A characteristic rise in temperature subsequent to injection of tuberculin is quite positive evidence of tubercular infection of the organism tested. The failure of this reaction is not evidence of the non-existence of such infection; but in general terms it can be said that the cases in which such failures are possible are limited to at least one in ten. Such a failure is generally due to the fact that the infected organism is so exhausted as to be no longer reactive. In such cases, of course, the clinical symptoms of tuberculosis are not deficient. The studies of the rise in temperature of the infected subject tested by tuberculin have shown that this tubercular affection provokes a marked hypersensibility of its victim to manifest high temperature on slight provocation. Based on this susceptibility to heighten temperature two methods of diagnosis are now used. Often, at the first onset of tubercular invasion, it will be found that the muscular and mental activities of the day's work are sufficient to provoke in the infected individual a slight rise of body temperature above the normal during the late afternoon or evening. This fact is of ancient clinical observation and use in the early diagnosis of tuberculosis. It is developed into a method of diagnosis when a suspected individual is directed to take moderate exercise for half an hour or more, with hourly observation of his subsequent temperature. A rise above the normal is strongly indicative of the existence of infection, if found to be a constant phenomenon under such conditions.

The second diagnosis method, based upon this characteristic rise in temperature, is widely used in France and seems to be of well proven reliability. It is based on the particular susceptibility of tubercular subjects, even in the earliest stages, to any dose of iodine. The method consists in administering to a suspected subject a relatively small dose of iodide of potassium and carefully observing the temperature of the ensuing 24 hours. If the subject be infected with tuberculosis, a marked rise of temperature is a quite constant phenomenon and a distinctly valuable point of diagnosis. Objection to this method is made, as also to the use of the injection of tuberculin, on the ground that the drug administered may facilitate the development of the pathological process. It can be answered, however, that such drug administration for purposes of diagnosis is not long continued nor often repeated, and, therefore, not liable to cause permanent injury when skilfully used and observed. One of the advantages claimed for the administration of iodine as an aid in the diagnosis lies in the temporarily quickened and augmented pathological actions; frequently permitting the clinical detection of the true temporarily exaggerated symptoms. One need not too hastily decry a diagnostic method on the ground that its use for the time being exaggerates a pathological condition. No one would rationally regret palpation for determining the localized pain on the ground that it temporarily exaggerated the pathological compression of swollen tissues. Because of the accusation —perhaps quite seriously made—of possible harm in the injection of tuberculin and the ingestion of iodine the use of these methods has remained quite limited in spite of their great utility and proven reliability for the precocious diagnosis of tuberculosis. Experts in very different lines of investigation have developed such results that the value of the preceding methods has been overlooked.

With the same fundamental property of tuberculin to develop a specifically marked reaction in the tissues of a tubercular individual, efforts to avoid the production of a general reaction of such organism by eliminating from the test the introduction of any tuberculin into the general system have been most successfully made. As the result of this line of experimentation, have been established three diagnostic methods,

all built upon this irritant property of tuberculin; but restricting to a minimum the area of the provoked reaction of the organism. First, in order of time of the introduction is the conjunctival; second, the inoculated cutaneous; and, third, applied-cutaneous reaction to tuberculosis. These methods are alike in fundamental principles and approach each other in the value of their results for the remarkably early diagnosis of any organism reacting to tubercular infection. They differ merely in minor details and in the technique of the several diagnostic methods, as indicated by the name applied to each.

The conjunctival reaction is obtained when one drop of a one per cent. solution of well-chosen tuberculin is cautiously instilled upon the temporarily inverted conjunctiva of an individual organically reacting to tubercular infection. Under proper conditions this reaction is shown by the intense reddening of the seat of instillation within a few hours, persisting from one to several days thereafter in practically all such infected individuals. The reddening of the thus instilled conjunctiva of a normal non-tubercular individual is practically never observed. Objection to the use of the conjunctival method is made by a claim that cases of serious complication of ocular tissues have resulted. One such case, about which a great deal was said and published in New York was found quite unfounded by the personal investigation of this writer. The men who have most thoroughly investigated this method—Wolff-Eisner and Calmette—and used it in very many thousands of cases, are strong in their showing that there is practically no harmful result to be feared in any case suitably subjected to the conjunctival test. The enormous number of individuals examined by this conjunctival method in the hands of the most expert observers has already permitted the collection of clinical data for establishing the use of this method, not only for diagnostic, but also prognostic, purposes. In speaking of this reaction it becomes my duty to point out a grave fault in many writings on this subject. The reaction is often referred to as the "Calmette reaction" on account of the propaganda and use made of the reaction by that authority. Apparently no writer who criticises the reaction as dangerous has taken the trouble to know what the so-named reaction really was, for I have found one appeared to know what sort of tuberculin Calmette used—a very vital point of this test if it is to be criticized as dangerous.

When Calmette took up his propaganda for the employment of the conjunctival reaction for the diagnosis of tuberculosis, he used a chemically precipitated and thus purified tuberculin in a standard solution and when he or his co-workers state the results of such tests as harmless you must remember that such results are from the use of a pure reagent. Subsequent writers seem to have utterly failed to consider the nature of the tuberculin as at all important. I have never been able to find one of these who knew anything about the kind of tuberculin used in the tests he so elaborately classed and criticized.

To avoid the criticism of possible harm to a valuable organ, the use of cutaneous reaction is often advocated. By the simple process of scratching the epithelium and the application of a drop of the same solution of tuberculin to this insignificant wound of the skin, in fact, the simplest sort of a vaccination operation at any chosen point of the tegument, the inoculocutaneous method of using tuberculin for the diagnosis of tuberculosis is carried out. A zone of more or less intensity and diffused redness of the surrounding tissues is developed in the course of a few hours and persists for one to several days in all persons reacting to a tubercular infection. In this method, as well as in the conjunctival, the clinical data accumulated would point to the great value of this test for both diagnosis and prognosis. It may also be found quite effective in its operation, according to the employment of tuberculin of human or bovine origin, to indicate the corresponding source of the infection of the subject submitted to this diagnostic method. To avoid abrasion of the epithelium, which is requisite in the inoculocutaneous method, a salve containing the tuberculin is thoroughly rubbed into a selected portion of the skin and this application is quite sufficient to provoke a manifest zone of intense redness of the skin of individuals reacting to the tubercular infection.

All of the preceding three methods of

diagnosing tuberculosis infection by the reaction of a selected and localized zone of tissue subjected to the activity of tuberculin, yield very prompt and valuable results and are subject to little objection or hostile criticism of any standing. This may account for the great rapidity of their spread into most extensive and very general use.

A French authority recently pointed out the ease with which this same line of investigation could be carried out by the simple application of a drop of the 1 per cent. solution of chosen tuberculin to any suitably prominent nasal turbinate or pharyngo-nasal mucosa. In this case a marked hyperemia of the point touched with the reagent rapidly develops and persists at least 36 hours in the individuals reacting to tuberculosis infection.

In the use of provoked high temperature the conjunctival or the cutaneous reactions to tuberculin it is scarcely probable that the individual submitted for such method of diagnosis will remain in ignorance of its import and nature. The positive reaction to such tests is most patent to such individual and must reveal to him this ill omen.

To avoid the liability of the patient's inevitable observation of a positive diagnostic conjunctival, cutaneous, or temperature reaction, it has seemed of great advantage to use the pharyngo-nasal mucosa for the chosen site for this sort of tuberculin application and observance of reaction. I have followed this as a method of procedure at my clinic at the New York Nose, Throat, and Lung Hospital for more than a year, with most satisfactory results. There is no difficulty of application of the reagent nor observation of any consequent reaction. The patient has no knowledge of the operation nor of its consequences. A long continued control of these cases by either a conjunctival or cutaneous test demonstrated the uniformity of results.

All of the preceding methods of diagnosis of tuberculosis involve the provoking of a phenomenon to be noted only by more or less constant and personal observation of the suspecting individual. Such methods are inapplicable for long distance control.

Two methods of determining the existence of a tubercular infection without continued or personal observation of the patient have been employed and are proving their claims.

The first method in point of time is based upon the well-known Pfeiffer serum reaction, which was the precursor of the Widal test, now so universally used. You will recall the fundamental principle of that reaction, as established by the clinical observation: that the serum of an individual resisting or recovering from an invasion of infectious germs, when added in a very dilute form to an active culture of the specific motile germs of that particular infection, would soon arrest all motility and provoke the sedimentation of such germs in their liquid cultures.

By careful search and cultivation, strains of tubercle bacilli have been found in which the individual germs are so motile that their fluid culture constitutes a really homogeneous suspension of the specific germs, with no sedimentation thereof at the bottom. To make with such culture a method of diagnosis of tuberculosis, it is sufficient to receive a minute amount of blood or serum of the individual suspected. This matter is added in diluted form to the liquid homogeneous culture above described, and if the organism of the source of such serum was reacting to tubercular infection, the phenomena of sedimentation of the bacteria takes place in their culture within a few hours, whereas no sedimentation results from the blood or serum of normal or practically non-tubercularized individuals. The accuracy of this method of serum diagnosis of tuberculosis is well established, and it corresponds very closely to the percentage reliability value of the conjunctival and cutaneous reactions.

The second method of this kind, also requiring a small amount of blood from the individual proposed for diagnosis of a tubercular infection, is still in the hands and control of its originator and must be mentioned here subject to all the reservations of a progressive step of great promise, but not yet released from the laboratory proofing of its foster-parent. The foundation of this method lies in Calmette's observation that an infection of tuberculosis which provokes an active resistance of the organism, determines the appearance of an appreciable quantity of lecithin substance in the blood of such individual. By reason of the special quality of cobra

venom to fix such lecithin matter, by the use of a standardized solution of this venom the amount of lecithin appearing in the blood of the individual can be determined and fixes a diagnosis of tuberculosis.

This method holds out to us a most entrancing promise, for subject to verification and control of his series of experiments, Dr. Calmette tells me that the amount of lecithin in the blood is an index of the organic resistance. In this case the accurate determination of the amount by this method permits the exact measure of the state of infection at any given time. The degree of resistance being then known, an exact method of prognosis, as well as diagnosis, is here available and what is of far-reaching import in medicine; a new power is placed in our hands when this method fulfills its promise; for by such accurate determination of a correct index of the progress of a disease we have for the first time a source of accurate knowledge and control of therapeutic efficiency.

The similitude of underlying factors involved in this work of Calmette and that which is bearing such ample fruit in the subject of hæmolysis is striking, and leads at once to the next line of diagnostic work, the serum diagnosis of syphilis.

Time only permits the mention of the easy and positive demonstration of the specific microbe of syphillis, which we possess for a diagnostic method of any suspected tissue, and the very simple and practical method used by Noguchi, whereby a minute portion of blood or serum of any suspected case can be sent to great distances for a diagnosis of very great reliability, which can be made in the laboratory in two hours' time. The value of this serum test is by no means limited to its use in diagnosis; for here, too, appears this new power in medicine which I have mentioned. By this method of serum test a positive knowledge of the state of the disease and an accurate measure of therapeutic efficiency is in our hands.

I must reserve for a future opportunity the demonstration of the resources of blood examination to show the onset of a diabetes long before any clinical symptoms of glycosuria, or to absolutely determine by a single examination any doubtful diagnosis of small-pox. But I must mention the power which the developed methods or cryoscopy have given us to foresee, forestall or control the critical periods of insufficient renal functions with consequently developing toxemia and our ability to accurately determine the degree of such impairment and select the impaired kidney.

Few realize the ease with which an examination of the blood will permit a diagnosis of pus formation in cases of pleurisy, appendicitis or cholecystitis and similar affections. The value of such easily obtained positive knowledge makes it an imperative duty for the medical practitioner to obtain every available aid from these diagnostic methods.

Editorial

Science and Politics.

It would scarcely seem proper that *The Public Health Journal* should not show its interest in the wider questions affecting its particular work by neglecting to refer editorially to the dominant issue which entered into the recent general elections for the Canadian Federal House. Dr. Crozier, of London, the well-known Canadian-born philosopher, said over fifteen years ago: "The scientific interest is always a potent one and is daily exercising more and more influence over the most intelligent and cultured minds." It may perhaps have been difficult to see any evidence of this fact in reading or listening to the heated discussions on reciprocity *versus* anti-reciprocity during the weeks preceding the elections; but, nevertheless, it is fortunately true that it is the daily influences from a man's environment which affect him and form his permanent character and which in an election contest make themselves felt in the expression of his opinion on any particular policy.

We have therefore an interesting field of enquiry as to how far the all-important questions of the hygiene of childhood, the inspection of school children, their housing and methods of instruction, the age at which they go to work, the influences of factory and store, and of the hurry of modern social and industrial life of every kind impressed the Canadian body politic in its outlook upon the reciprocity issue.

There seems no doubt that the essence of the question lay in the problem of whether Canada's economic, social and national life was to be promoted or injured by close commercial relations with the United States; whether prices on the whole were to be reduced to the consumer or advanced to the producer; whether the present busy Canada was to be injuriously affected or benefited by freer commerce with a country in some matters more advanced, and whether those quite definite characteristics which mark Canadians and which, with national pride, are deemed superior, were in social and moral affairs to be influenced adversely or not by making intercourse across the Boundary yet more easy.

In the matter of the simplest consideration—that of the demand and supply of food—we recognize at once a public health question. Should wheat be permanently increased by reciprocity by 5 per cent. Canadians would have an increase of three million dollars added to the price of their wage-earners' bread, and hence an increased cost of living; but, on the other hand, Canada might expect, owing to free fruits, an extension of the use during the winter of fruits from the south, which are a necessary anti-scorbutic in northern climates and so perhaps more than make up for the increased cost of bread. Again, in the matter of meat, there is already abundant evidence to show that the economy in the preparation and preservation of carcasses due to cold storage would increase the Canadian supply of cold storage meat under freer trade beyond the point of similar supply from home-grown animals; and every scientific observer will agree that if the knowledge of refrigeration could be made universal for Canadian farmers, butchers, and supply men—with the steady industry of the northern farmers, coupled with the permanence of local markets and the less cost of transportation, the application of this process would not only enable Canadians to compete favorably with any and every outside supply, but the consuming public would also be more healthfully and economically served if the waste through unscientific handling of these perishable products were thus prevented. This would be equally true of milk, eggs and butter, and still more true in the matter of Canadian-grown fruits, which, including the small fruits, are to-day only available for a day to day supply, and cannot be generally sent to any distant place either in large quantities or in a properly ripened or assured condition of preservation; if competition thus served to teach the science of refrigeration as applied to meats in Chicago or fruits in California, then reciprocity should have its compensations for Canada.

Both Canada and the United States have further, within the last year or two, had

enough loss of life through forest fires to teach them, one would think, that the application of adequate and scientific methods of protection against this danger is not only a public health duty, but a practical possibility. And yet it would seem apparent, after thirty years' observation, that the saving of human life or the application of science in a systematic way to the forest fire problem will not take place until the people and their representatives arrive at a proper realization of the real value of the domain thus requiring protection. Perhaps an increase in the price of pulpwood may hasten this day.

There are other phases of the reciprocity problem serious to Canadians viewed from the health standpoint. Within the last few years, for instance, owing to the operation of a tariff clause admitting milk products free into the United States a trade has sprung up by which not only is cream being sent across the border from neighboring parts of Canada to New York and other states, but the dried casein is also finding a market in relation to sugar refining and like industries to an extent which may very seriously affect the public health. It is quite evident that anything lessening the local supply of such articles as milk, or increasing abnormally their prices, would directly affect the health of the children and ultimately of the race. But such a trade, if increased, goes further. It lessens the available milk for pig feeding and would certainly lower the standard of Canadian bacon, which has hitherto stood higher than American corn-fed by virtue of its better bone and muscle admixed with the fat. Should it lessen the local production of butter it would further limit the supply of that kind of fat looked upon as essential by every town-resident in Canada.

In the social sphere many Canadians have seen nothing which would incline them to closer relations with the United States, and it might perhaps be well for those utilitarians who recognize in the reciprocity problem a question of trade and prices only to study Thomas Carlyle's "Latter Day Pamphlets" and his cynical references to the *pig-philosophy* of the *laissez-faire* school of philosophers.

On the other hand, the trade restrictionists—if anti-reciprocity be thus interpreted—would do well to remember that to be a jingo is not to be a good Canadian; that Canadians have pressing national, municipal, and social duties to perform towards their own poorer classes and towards those new-comers, whether in city or town, who have come because they were needed, and whose life and labour have done so much to make the Canada of to-day self-centred, contented and prosperous.

Perhaps what Canadians and their neighbours are to-day needing to understand more even than trade problems is what the late Sir John Simon, the first Chief Medical Officer of England, said in an address on "Experiment as a Basis of Preventive Medicine": "To the science of nature is indeed allotted that one incomparable human day which knows no sunset. In the fierce light of its everlasting daybreak individual workers will pass away, generations will change; but the studies of nature, and, above all, the gathering of such knowledge as can lessen man's physical difficulties and sufferings will surely grow from age to age; and, as in Proserpina's sacred tree, one golden fruit will follow another—*Simili frondescat virga metallo!*"

Inter Alia.

Dr. Geo. G. Nasmith, City Bacteriologist of Toronto, stirred up some nervousness by recently publishing the results of his official investigation into the products of the numerous and recently-launched water companies of that city

It appears, from Dr. Nasmith's report, that the majority of these several waters, being hawked so strenuously around Toronto, are far from being as pure as the water supplied by the municipality itself. In fact, dangerous bacteria were found in a number of the samples purchased on the open market and tested. And we understand, as a result of this investigation, that some of the water companies so criticized, will cease doing business. In this connection, Dr. Reid's suggestion on page 457, in reference to Toronto water, should be read.

Without going into the merits of the public health service as a career, we may safe-

ly say that the possession of the degree or diploma in state medicine, sanitary science or public health is an advantage which, at the present time, is widely appreciated. It should be held by candidates for any public health appointment and it has become popular among many other classes of practitioners. There is now no difficulty in obtaining the necessary courses of instruction, the degree being given by institutions like McGill University, Laval and the University of Toronto in this country, the universities of England, Ireland and Scotland and leading universities in the United States. It is only recently, however, that the large universities of the United States have decided to place the course in their curricula.

The subjects for study include sanitary chemistry; sanitary physics, sanitary legislation, bacteriology and parasitology; vital statistics; meteorology and climatology; preventive medicine and practical sanitation. And the regulations of all examining bodies for this degree are drawn on similar lines; as a rule a period of not less than twelve months shall have elapsed between the attainment of a registrable qualification in medicine, surgery and midwifery and the diploma in state medicine, sanitary science or public health.

A year and five months ago, in the June 1910 number of this Journal, it was editorially pointed out, our readers will remember, under the caption, "The Medical Council," that the sight, was far from edifying, of practicing physicians of reputed high ideals, graduates mostly of equally efficient national universities, meeting in the different provincial sub-divisions of this country, annually or more frequently, at the expense of an easy going electorate, apparently for the purpose of levying questionable taxes, collecting personal expenses and strengthening against one another the by-law fences of local lobby-purchased medical preserves.

It was also stated that the methods might well be questioned of such provincially encounciled members of the noble and naturally unconfined profession of medicine, who not only impede the arrival of interprovincial reciprocity in medical registration but who unprotestingly inherit a departure from the economical, broad-minded, and dignified position of pure inspection and academic standard regulation and yield their yeas to its continuance and to the continuance by test duplication of petty distrust in the examining probity of our great state-endowed and coestandardized universities.

As a result of these sentiments, expressed even more strongly by several of our contemporaries, we are now glad to be able to comment favorably upon the action of the Medical Council of Ontario. The Ontario profession has at last, under the leadership of Dr. Edward Ryan, had itself officially recorded as placing trust, at least to a greater extent than heretofore, for examination purposes, in the universities which they recognize as competent to carry on the work of medical education. The Ontario university matriculation standard is now the standard of this Council and all Ontario Council examinations have been abolished—except the fifth year final test in medicine, surgery, and midwifery.

One of the most momentous undertakings in relation to public health has recently been initiated by Dr. William A. Evans in The Chicago Tribune. Dr. Evans has undertaken the editorial management of a department in the Tribune, his purpose therein being to help public health government, municipal, state and federal, in gaining that publicity which is absolutely essential to its success.

The Chicago Tribune has always been a leader among publications giving help to movements for the safeguarding of society; it has been careful always to protect its readers against the improper and exaggerated statements so frequently seen in newspapers of a less conscientious class, and has at all times fought hard for that highest grade of medical service so well typified in the career of the latest member of its editorial staff, Dr. William A. Evans.

Library and Laboratory

"Personal Hygiene and Physical Training for Women."

Under the above title Dr. Anna M. Galbraith has written a valuable book. She has succeeded in reciting clearly and concisely the fundamental laws upon which all personal hygiene is based and has given accurate and useful directions for the proper development of the body and the training of the physical powers to their highest degree of efficiency. Dr. Galbraith alludes to the fiat which has gone forth from the American Medical Association for the scientific education of the public in the laws of hygiene and sanitation and she has made this fiat the foundation of a work which may be considered authoritative in its special field.

The book considers in nine chapters: Hydrotheropy; the Care of the Skin and its Appendages; The Digestive System and the Maintenance of a Good Digestion; the Respiratory and Circulatory Systems under which heading are included, the Kidneys and the Female Pelvic Organs; the Nervous System as the Balance of Power in the Body; Hygiene of the Mind and its Relation to the Physical Health; Dress; Physical Training; and Symetric Development, including therein good carriage and grace of motion.

Under the heading Hydrotheropy, Dr. Galbraith speaks of the Alcohol Rub, the Salt Glow, the Electric Light Bath and the Internal Use of Water, describing all other forms of water application, together with the skin and its functions. In regard to the internal application of water, she cautions her readers to avoid the mistake of undoing the good that would be done in boiling or filtering drinking water by adding ice when it is placed on the table, and considers fully the action of water on the digestion and its therapeutic indications.

One of the most interesting parts of the work is the consideration of the Complexion. Dr. Galbraith points out that the face is a complete index of the life of the individual, written large ,so that he that runs may read. By looking at the condition of the skin and the whites of the eyes we can judge very fairly of the digestion. From the dulness or brilliancy of the eyes we can make a very fair diagnosis of the general condition. From the general expression of the face we can read the kind of life that has been led by the individual, whether of pleasure, dissipation or sorrow.

From greatest antiquity men and women have striven to beautify their bodies. To be indifferent to presenting a pleasing appearance is, in Dr. Galbraith's opinion, an indication of some abnormal condition in the individual or her environment. She points out that the ideal complexion combines the qualities of clearness, translucency and fineness of the outer skin and the proper disposition of the blood, and asserts that the beauty of the skin is evidence of good respiration, good digestion, proper excretion of the bowels, skin and kidneys, good condition of the blood and plenty of outdoor exercise. Under some conditions, certain applications to the skin are pointed out as being admissable and beneficial; and suggestive formulas are given. The Hair is fully considered as well as the cosmetic treatment of the hands.

The author says in relation to the Hygiene of Work, that the proper selection of work for the particular brain to do and the physiologic regulation of the work done is its basis—"For health, for happiness and efficiency, right work, rightly done, is the most important matter in any man's or woman's life. The physiologic, as well as the moral necessity, has always been conceded for every man to have a life work — a vocation; a work for which he should be fitted and for which he was capable, sufficiently congenial not to sink into mere drudgery, and which would, at the same time afford ample financial compensation to be remunerative and a stimulus to his power of endurance.

"Important from the physiologic point of view, as a vocation is for men, it is equally or more important for women."

The book is fully indexed and illustrat-

ed, the illustrations being especially good. Interesting tables are also given, such as the relative proportions of a perfect female form and a table of standard weights for women. — *"Personal Hygiene and Physical Training for Women," by Anna M. Galbraith, M.D., Fellow of the New York Academy of Medicine, 12 Mo. of 375 pages, with original illustrations. Philadelphia and London. W. B. Saunders Company, 1911. Cloth. $2.00 net. The J. F. Hartz Company, Limited, Toronto, Canadian Agents.*

"Proper Living Upon a Physiologic Basis."

Another manual dealing with Personal Hygiene comes to us edited by Dr. Walter L. Pyle, being the fourth edition of the work, enlarged and revised. It is an illustrated compilation of special contributions, each contributor being a recognized expert in his special field.

The subjects dealt with, in order, are: Hygiene and the Digestive Apparatus, by Charles G. Stockton, M.D., Professor of Medicine in the Medical Department of the University of Buffalo; Hygiene of the Skin and its appendages, by Geo. Howard Fox, M.D., Clinical Assistant, Dermatological Department, College of Physicians and Surgeons, New York; Hygiene of the Vocal and Respiratory Apparatus, by E. Fletcher Ingals, M.D., Professor of Laryngology and Diseases of the Chest in Rush Medical College, Chicago; Hygiene of the Ear, by B. Alex. Randall, M.D., Professor of Diseases of the Ear in the University of Pennsylania, Philadelphia; Hygiene of the Eye, by Walter L. Pyle, M.D., Assistant Surgeon in Wills Eye Hospital, Philadelphia; Hygiene of the Brain and Nervous System, by J. W. Courtney, M.D., Physician for Diseases of the Nervous System, Boston City Hospital; Physical Exercise, by G. N. Stewart, M.D. (Edin.), Professor of Physiology in the University of Chicago; the Body Posture, by Joel E. Goldthwait, M.D., of Boston; and Domestic Hygiene, by D. H. Bergey, M.D., First Assistant in the Laboratory of Hygiene and Assistant Professor of Bacteriology in the University of Pennsylvania, Philadelphia. An appendix is added dealing with House Temperature and Respiration, Baths, Massage, Accidents and Emergencies, Poisons and Antidotes; a glossary being attached and the work fully indexed.

Dr. Pyle, among his introductory remarks, points out that most cases of illness are preventable, following as they do disobedience of physiologic laws. There is such a thing as physical morality, he says, and the preservation of health should be considered a sacred duty. Personal Hygiene being applied physiology, a proper understanding of certain elemental truths must be acquired before they can be applied.

Concerning a certain failure in human nature, Dr. Pyle remarks that persons of intelligence often furnish thoughtless recommendations of purely "quack" remedies and unscientific instruments and apparatus—"The advertisements of these articles may be seen in the best general and religious periodicals. The literature of the laymen pertaining to personal hygiene is in great measure unsatisfactory and irresponsable. Many of the so-called health books being of a very questionable authorship." And—"There is a multitude of the best parents who think that their way is not made easier by the so-called moral reformer, but rather the reverse."

As Dr. Pyle further points out, it is not desirable to produce athletes, physical culture fanatics, nor practitioners of new-fangled and erratic "systems" and "pathies." What is needed is simple instruction by capable teachers in the proper care and use of the body, authoritatively based upon the best available modern anatomic, physiologic and hygienic data. We should not have "every man his own physician," as seems often the object in lectures, periodicals and books relating to health; rather give every man fundamental knowledge that will enable him to understand and, if necessary, formulate the requisite rules of health and to distinguish scientific medicine from quackery.—*A Manual of Personal Hygiene, Proper Living Upon a Physiologic Basis. By eminent specialists. Edited by Walter L. Pyle, M.D., Assistant Surgeon to the Wills Eye Hospital.. Philadelphia. 4th revised edition. 12 mo. of 472 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1911. Cloth. $1.50 net. The J. F. Hartz Co., Limited, Toronto, Canadian agents.*

"Inspection of Fruit, Game, Fish, etc."

As a practical guide for those who undertake the inspection of fish, poultry, game, fruit, nuts, and vegetables, this little work is invaluable. Our readers will find its 160 pages and numerous illustrations interesting and instructive. The book contains acts and regulations concerning inspection; the appendix consisting of a list of questions set by the Royal Sanitary Institute, the answers to which, by means of the index, may be found in the body of the book. — *The Inspection of Fish, Poultry, Game, Fruit, Nuts and Vegetables, by H. Horace Walker, Sanitary Inspector to the Metropolitan Borough of St. Pancras, Late Instructor and Lecturer to the Essex and Middlesex and Hertfordshire County Councils. London: Baillière, Tyndall and Company, 8 Henrietta St., Covent Garden. 1911. 5s. net.*

"Principles of Hygiene."

School children are often victims of irrational methods of health teaching. This should no longer be the case when both teachers and scholars have the opportunity of perusing and beneficially enjoying the latest work on the subject, by Dr. J. Halpenny and Lilian B. Ireland. The authors are Winnipeg people and the work is authorized for use in the schools of Manitoba. Manitoba is to be congratulated.

It is well pointed out in the foreword of this book that the central thought in the discussions of such topics should be the life of the body and a study of the means at the disposal of the people by which it can be preserved in the state of highest efficiency; the authors believe and base their teaching upon this belief, that an eliminative study of the bony frame or the intricate physiology of the body cannot so well tend to develop right methods of living. Public health, in other words, has made much progress in the last few years and there are many interesting incidents regarding the conquest of science in this direction, and the authors believe that such incidents should be taught school children before the dry details of anatomy and physiology.

A better illustration, however, might have been chosen than that on page 60, which has a tendency to leave the reader falsely under the impression that the natural foot is not beautiful.

Among the good things cleverly expressed in "How to be Healthy" are that: "Some day a clause will be put in the law regarding government grants, providing that trustees who do not have the school premises scrubbed at least once a fortnight will not receive help from the governments. This is far more necessary, in loyalty to our Dominion, than making a great show of the flag. We need the flag over our schools, but under that flag marches the race which is first in all things which betters humanity, morally, mentally and physically"; . . . that "two or three holes in a storm sash are not sufficient for one person, let alone two, in a room;" . . . and to "never let yourself play unfairly. It's only a game but what is a game? How were games invented? Again our savage ancestors are our teachers. They told of their fights, of their triumphs and failures around the camp fire at night. They acted it over again so that those who had not been there with them could see how brave they had been. Then all joined in. Next day the boys and girls played it over again. It is a game of life played for fun. Don't you see that if the game is not played fairly, the game of life may be a failure, too?"

In dealing with mental hygiene, the idea so well expressed by Ella Wheeler Wilcox: "Thoughts are things and their airy wings are swift as the carrier dove. They follow the law of the universe, each thing must create its kind, and they speed o'er the track and bring you back whatever went out of your mind"—is the basis of the talk on self-control.

And what a truth is this that we find in the chapter dealing with The Home: "We fear that some boys and girls in the country are anxious to leave the farm and go to the city because the home is possibly too much a place of drudgery and too little a place for enjoyment."

"How to be Healthy" is a small book, but its 38 chapters contain life facts, beautifully, simply and most interestingly told. The extent of the subjects dealt with may be gleaned from the titles of the chapters: Sunlight; Fresh Air; Ventilation; Sleep; Respiration; Physical Drill; Mental Hygiene; Clothing; The Home; The

Country School House; Summer Holidays; Foods; Selecting and Preparing Food; The Care of Food in the Home; Good Water; Clean Milk; Bad Milk; Alcohol; Alcohol and Animals; Alcohol and Men; Tobacco; Dust; Sweeping and Dusting; Microbes; Microbes in Action; Microbes and Disease; The Blood in Health; The Blood in Disease; Infectious Diseases; Tuberculosis; Disinfection; Home Nursing; Skin; The Nails; Care of the Mouth; The Eyes; Ears, Nose and Throat; Emergencies.

Each chapter is summarized at its end in a few sentences under two heads: "What to do" and "How to be Healthy." —*How to be Healthy, by J. Halpenny, M. A., M.D., Surgeon to the Winnipeg General Hospital, Lecturer in Surgery in Manitoba Medical School, and Lilian B. Ireland, Manitoba Normal School. Authorized for use in the Schools of Manitoba. 242 pages. Illustrated. Toronto: The Educational Book Co., Limited, 84 Spadina Ave. 40c. net.*

"How to be Healthy."

The new third edition of Dr. Bergey's work on the "Principles of Hygiene" comes to us revised and enlarged. The recent important discoveries in the domain of etiology, as, for instance, that relating to the Spirochæta Pallida, have been incorporated. Following the changes in our knowledge of immunity the section touching upon this subject has been largely re-written. The book has been prepared to meet the needs of students of medicine in the acquirement of the knowledge of those truths upon which modern hygienic practices are based; to aid students in architecture in comprehending the sanitary requirements in ventilation, heating, water supply and sewage disposal; and to aid physicians and health officers in familiarizing themselves with the advances made in hygienic practices.

Dr. Bergey's introduction discusses the Cause of Disease, Sanitary Science and Hygiene; and the twenty-two chapters following deal with Air; Ventilation; Heating; Water and Water Supply; Removal and Disposal of Sewage; Garbage Disposal; Exercise; Clothing; Personal Hygiene; Industrial Hygiene; School Hygiene; Military Hygiene; Naval Hygiene; Soil; Habitations; Fatal Cases of Disease; Disinfection; Quarantine and Vital Statistics. The Appendix contains a number of useful tables. — *Principles of Hygiene, the new third edition. For students, physicians and health officers. By D. H. Bergey, M.D., Assistant Professor of Bacteriology University of Pennsylvania. Third revised edition. Octavo of 555 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1911. Cloth, $3.00 net. The J. F. Hartz Company, Limited, Toronto, Canadian agents.*

"Public Health and National Insurance."

This is a compilation, in pamphlet form, of articles by the author, recently published in certain periodicals, dealing with medical service in relation to state insurance. Dr. Richards urges the advisability of a more unified medical service than is suggested by Lloyd George in the British National Insurance Scheme; and argues that the local health committee of this bill should become a statutory committee of the county or borough council, pointing out at the same time that the medical service should be mainly preventive. The argument is somewhat in opposition to ideas of the British Medical Association, but makes interesting reading and is well presented in divisions dealing with: Hopes and Fears; The National Insurance Bill and Preventive Medicine; The Provision of Sanatorium Benefit; The National Insurance Bill and Public Health, followed by an Appendix giving particulars of typical friendly societies and medical clubs. — *Public Health and National Insurance. By H. Meredith Richards, M.D., Medical Officer of Health and School Medical Officer, Croydon. London: P. S. King and Son, Orchard House, Westminster. 1911. 6d. net.*

"Inquests and Investigations."

Dr. Arthur Jukes Johnson, of Toronto, has supplied a want in furnishing, under the above heading, a practical guide for the use of coroners holding inquests in Ontario. It contains all the necessary forms for coroners' use and the text, in full, of "An Act Respecting Coroners and Coroners' Inquests." The work is fully indexed and small enough to be carried

in the pocket. — *Inquests and Investigations — A Practical Guide for the Use of Coroners Holding Inquests in Ontario. By Arthur Jukes Johnson, M.D., M.R.C.S., England, M.M.C., Chief Coroner for the City of Toronto. Canada Law Book Co., Limited, Toronto. 1911. $2.50 net.*

"Bulletin Sanitaire."

The Sanitary Bulletin of the Province of Quebec, circulated par autorité Du Secrétaire de la Province de Québec, published by the Provincial Council of Public Health, of which Dr. E. P. Lachapelle is President and Dr. Elzéar Pelletier, Secretary, comes to us for the six months of March, April, May, June, July and August, replete with interesting matter. The printing of the articles indiscriminately as written in either French or English is a good plan.

A matter of interest taken up in the Bulletin is the Division du territore de la province de Quebec en 10 districts sanitaires.

Le Gouvernment de Québec a bien voulu donner son assentiment au projet, que lui avait soumis le Conseil d'hygiène, de diviser la Province en 10 districts sanitaires et d'installer dans chaque district un hygiéniste de carrière qui y représentera le Conseil d'hygiene, a titre d'assistant inspecteur, et donnera tout son temps à la province.

Les nominations des 10 assistants inspecteurs ne se feront pas, cependant, avant le mois de Juillet 1912, afin de donner le temps aux médicins qui désireront poser leur candidature, de se qualifer pour la position, en suivant les cours spéciaux d'hygiène appliquée qui se donneront dans les trois universités de la province, du premier octobre 1911 au milieu de juin 1912, cours qui se termineront par les examens pour l'obtention du diplôme d'hygiène publique (i.e. diplôme d'hygiéniste de carrière.)

Le traitement annuel de ces inspecteurs régionaux sera de $1,200.00, avec perspective d'atteindre un traitement de $1,500.00 pour ceux dont les services donneront satisfaction au Conseil d'hygiene. Les frais de déplacement des inspecteurs, dans l'exercice de leurs fonctions, seront à la charge du Conseil d'hygiène.

According to the advance draft the Province is divided into districts as follows: Metapedia, 65 municipalities; Fraserville, 83 municipalities; Quebec, 152 municipalities; St. Hyacinthe, 118 municipalities; Sherbrooke, 165 municipalities; Valleyfield, 84 municipalities; Montreal, 121 municipalities; Hull, 117 municipalities; Three Rivers, 109 municipalities; Chicoutimi, 74 municipalities.

The fourth Convention Annuelle Des Services Sanitaries de la Province de Quebec, is reported with the excellent addresses of the several speakers, that of Dr. Elzéar Pelletier, "Avant-projet pour l'inspection semi-medicale des ecoles rurales de la province de Quebec," here following:

Dans son rapport annuel de 1900, le Conseil d'hygiène de la Province a appelé l'attention sur l'importance de *l'inspection médicale des écoles;* mais, jusqu'à présent, seules deux municipalités, l'ont organisée: Montréal en 1906, et Lachine l'automne dernier (1910).

A sa réunion de Sherbrooke et beaucoup mieux encore à sa réunion de St. Hyacinthe, votre Convention a émis des vœux pour faire étendre l'inspection médicale des écoles à tout le territoire de la Province. Pour aider à la réalisation de ces vœux, j'ai pensé qu'il y aurait avantage à provoquer, aujourd'hui, une discussion sur les moyens d'organiser l'inspection pour les *écoles rurales.* Si je m'en tiens à un plan plus particulièrement applicable aux écoles rurales, c'est que, pour les écoles urbaines, on peut déjà s'inspirer aux deux plans élaborés par Montréal et par Lachine; celui de Montréal pour une inspection quotidienne, qui est précieuse pour le dépistage des contagieux et celui de Lachine pour une inspection hebdomadaire avec attention particulière donnée à la confection de la "fiche de santé" de chaque écolier et à son maintien à jour.

Le dernier rapport du Surintendant de l'Instruction Publique porte à 42,863 le nombre des écoliers dans la ville de Montréal et M. le Dr. Baudouin, médecin municipal de Lachine, évalue à 2,000 le nombre des écoliers dans cette ville; soit, pour les deux villes ensemble, 44,863 écoliers qui bénéficient de l'inspection médicale. Comme le Surintendant de l'Instruction Publique porte à 381,146 le nombre des écoliers de la province, nous restons avec 336,282 écoliers encore à découvrir. Ces

336,282 écoliers sont distribués dans les 6531 écoles ou institutions scolaires, soit une moyenne de 98 écoles par comté. Voyons ce qui pourrait être probablement fait pour ces 6531 écoles.

L'inspection d'une école a pour objet:

1° De faire établir quelles sont les conditions de salubrité du bâtiment scolaire,

2° De constater si les programmes suivis sont trop chargés et si les heures de classes sont en proportion de la capacité physique moyenne des élèves.

3° D'évincer les élèves infectieux.

4° De constater l'état physique de chaque élève.

Dans les municipalités urbaines, les inspecteurs-médicaux des écoles sont chargés et avec raison de toutes ces opérations. Pour les écoles *rurales*, je soumets qu'il a lieu de distribuer l'ouvrage de manière à pouvoir utiliser ce que nous avons d'immédiatement disponible; c'est d'ailleurs le seul moyen, de rester pratique et d'obtenir des pouvoirs publics qu'ils donnent suite à nos vœux et suggestions.

I—Pour établir les conditions de salubrité des 6531 batiments scolaires présentement envisagés, je propose d'utiliser les 49 inspecteurs d'écoles que le Département de l'Instruction publique a déjà à son service. Ces inspecteurs sont tenus de visiter les écoles de leurs circonscriptions respectives deux fois l'an et auraient ainsi toutes les facilités pour dresser le *casier sanitaire* de chaque école, sans qu'il en coûte un sou additionel à la Province. Il n'y aurait qu'à mettre entre les mains de ces inspecteurs un questionnaire précis, qui ne permette de réponses échappatoires, pour avoir d'eux un rapport tout aussi bien fait que le sont ceux des médicins inspecteurs dans les villes. Ce questionnaire pourrait être libellé, conjointement, par le Département de l'Instruction publique et le Conseil d'hygiene de la Province.

II—Passons à la constatation de l'adaption des programmes d'étude et de la longueur des heures de classe à l'âge des élèves, afin de prévenir le surménage et la sédentarité Le Département de l'Instruction Publique est je crois, toujours parfaitement renseigné par ses 49 inspecteurs ordinaires sur ce qui se fait dans ses écoles et, par consiquent, il peut, chaque fois qu'il y a un doute sur la possibilité de surmenage par un programme trop chargé ou de sédentarité exagérée pour certaines écoles, consulter un physiologiste, en attendant que le département ait le directeur-médical attiré, dont il sera question ci-après.

Ce deuxième objet de l'inspection peut donc, comme le premier, être dévolu au Département de l'Instruction Publique tel que présentement constitué.

III — Dépistage et éviction des écoliers infectieux. Je considère que, dans les campagnes, ce dépistage doit être dévolu aux bureaux municipaux d'hygiène. D'ailleurs, dans les municipalités bien organisées, il est déjà fait par le médicin municipal, car rien ne peut mieux renseigner l'autorité sanitaire municipale sur les maladies contagieuses régnantes dans sa juridiction que des visites répétées à l'école. En temps d'épidémie surtout, une municipalité ne peut prétendre avoir pris des mesures complètes, adéquates, sans ordonner ces visites pour tout le temps que dure l'épidémie.

IV — Reste l'examen individuel de l'écolier pour découvrir les tares et autres défectuosités qui l'empêchent de suivre avantageusement ses classes et qu'il importe de signaler à sa famille, pour que l'avenir de l'écolier ne soit pas compromis.

Ici nous n'avons rien d'immédiatement utilisable, tout est à créer. Il s'agirait de nommer des médecins-inspecteurs qui, à l'automne (à l'ouverture des classes), feraient l'examen de tous les élèves *commençant leurs études cette année là* et dresseraient pour chacun d'eux une "fiche de santé."

En fixant à 5 le nombre moyen d'années qu'un enfant passe à l'école, notre chiffre total de 336,282 écoliers nous donne 67,256 élèves *entrants* à faire examiner par année. Comme l'expérience à démontré que cet examen médical prend en moyenne 15 minutes par élève, il y aurait pour 16,814 heures d'ouvrage soit, calculant 8 heures de séance par jour, 2,100 jours. Avec 67 médecins-inspecteurs, soit un inspecteur-médical par comté, nous aurions, pour chacun d'eux, 31½ jours de séances, auxquels il faudrait ajouter le temps passé sur la route.

Mais, en plus des élèves *entrants*, les inspecteurs devront réexaminer ceux des *anciens* dont les fiches n'ont pas été satis-

faisantes durant les années précédentes et, dans certains cas, vérifier l'exactitude des "cahiers sanitaires des bâtiments scolaires" dressés par les inspecteurs ordinaires des écoles; de sorte que nous devons plutôt prévoir, pour chaque inspecteur-médical, une durée moyenne annuelle de service de deux mois (séances et déplacements compris).

En Angleterre, le "Board of Education" pourvoit à un deuxième examen régulier des élèves, l'année de leur sortie de l'école. Mais pour nous qui n'avons encore aucune organisation, cet examen des finissants me paraît une question pour l'avenir.

Le choix des 67 inspecteurs-médicaux devra être soigneusement fait. Le moyen d'élaguer les fruits secs est de faire concourir les aspirants. Nos trois universités pourraient, préalablement au concours, organiser un cours spécial facultatif. Comme modèle de syllabus pour ces concours, nous avons celui formulé par la ville de Paris.

Pour diriger les opérations des 67 inspecteurs-médicaux, le Département de l'Instruction Publique aura besoin d'un "directeur-médical de l'inspection des écoles." Les duplicata des 67,256 fiches dressées par les médecins-inspecteurs lui seraient envoyées; il aurait, de même, accès aux cahiers sanitaires des bâtiments scolaires dressés par les 49 inspecteurs actuels du Département. En outre, le Département le consulterait nécessairement sur les questions médicales et sanitaires qui surgissent à tout moment dans un département de l'instruction publique.

La question qui se pose probablement dans vos esprits est de savoir quel serait le coût d'un service d'inspecteurs-médicaux qui serait organisé dans les lignes ci-dessus.

Les dépenses de déplacement de chaque inspecteur seraient de $3.00 par jour en moyenne, soit $1.50 pour pension et $1.50 pour coches, ce qui fait pour les 67 inspecteurs ($3.00 x 60 jours x 67 inspecteurs) égale $12,505.00.

Quant au chiffre total des honoraires pour les 67 inspecteurs travaillant pendant 60 jours, il suffirait de connaître le montant qu'on serait disposé à accorder par jour, pour l'établir séance tenante.

Le salaire du "directeur-médical en chef du service" ne doit pas être porté entièrement sur le bilan des dépenses de l'inspection présentement envisagée, car, comme nous venons de le voir, sa présence au département de l'Instruction publique est déjà nécessaire pour les consultations médicales et sanitaires dont doit avoir souvent besoin le département.

En allouant une somme assez ronde pour papeterie spéciale, je ne crois pas que le coût d'un service de 67 inspecteurs-médicaux dépasserait $35,000.00 par année.

Doit-on dépenser cette somme? Je vais vous en laisser juger vous-même après avoir mis sous vos yeux les chiffres probables de malades ou de défectueux parmi les 336,282 écoliers de cette province qui ne bénéficient pas encore de l'inspection médicale; malades et défectueux qui, suivant très mal leurs classes, ne seront pas suffisamment préparés pour soutenir les luttes de la vie et iront se détériorant davantage, faisant perdre au pays des vies qui auraient pu être utiles, augmentant le nombre d'infirmes que la société aura eu à secourir plus tard et dont un certain nombre s'acheminent déjà vers nos prisons.

En prenant pour base les taux d'invalidité que l'inspection médicale faite en Angleterre a permis d'y établir pour les écoliers anglais, les défectueux parmi les *336,282 écoliers de notre province* qui ne sont pas encore secourus, se chiffreraient comme suit:

33,628	souffrant de défauts sérieux de la vue	10%
13,451	suffrant de défauts de l'ouïe	4%
6,725	auraient des oreilles suppurantes	2%
26,902	auraient des tumeurs adénoïdes ou des amygdales hypertrophiées qui obobstruent ou le nez ou la gorge	8%
100,884	suffrant de carie dentaire avancée	30%
3,362	lartreux	1%
3,362	tuberculeux, d'une forme très facile à reconnaître.	1%
4,202	cardiaques	1¼%
33,628	de nutrition défectueuse (ce dernier chiffre est basé sur la moyenne établie par Hogart)	10%
226,144		

Ces chiffres donnent un total de 226,144 *probablement* défectueux sur les 336,282 écoliers de cette province qui ne bénéficient pas encore d'une inspection médicale!

The Value of Heredity.

Dr. G. Archibald Reid, author of "The Principles and Laws of Heredity," says in a recent paper on "*What is the Value of Heredity?*" that evolution implies adaptation to the environment. Degeneration implies the contrary. All plants and animals are adaptional forms. Man and the beetle can live in their own environments, but not in one another's. The right theory of evolution and the right theory of heredity must fit in with this fact of adaptation. Only one theory of heredity fits the facts — Darwin's theory of natural selection. Selection implies a selective mortality, that the fittest survive and the unfittest perish, as a general rule. Many people die young. Who were they? Those who were weak against various microbic diseases. Each disease in its own habitat weeds out the unfittest. One other source of elimination is alcohol, to which people vary in susceptibility. If the ill-conditions which affected the parent do not, as a general rule, tend to alter offspring, then since the offspring do vary spontaneously the fit would be preserved and the unfit would be weeded out and the race would undergo protective evolution. Do the ill-conditions of the parent as a rule tend so to affect offspring that they weakened, or is the alternative theory true, that the ill-conditions of the parent do not tend to affect offspring? A very unhealthy condition is to be found in the slums of great cities. There are parents who are unhealthy and children who are puny. What is the connection between the puniness of the children and the unhealthiness of the parents? Are the children puny because their parents are unhealthy, or because they are reared under unhealthy surroundings? Since the fit will survive the race will go on getting more and more resistent to slums. Are children living in slums getting resistent to slums, or are they degenerate? The races most exposed to slum life are Jews and Chinese. Those races have not grown degenerate. There has been selection and the races have undergone protective evolution. The races longest exposed to consumption are most resistent to consumption. In every case it is not degeneracy but evolution. Taking alcoholic disease as an instance, the English of the present day are more temperate than their ancestors, and the most temperate of all are the upper classes, who take as much as they want, but do not want much. In every case one gets protective evolution. Children tend to resemble their parents on the whole — a man produces a man and a beetle produces a beetle — but they vary in details. The differences are not produced by the direct action of the environment of the parent, but they are called spontaneous. Offspring are not rendered degenerate by the misfortunes of their parents, but races undergo evolution owing to the fire to which they have been exposed. Sufferings do not affect a race; it is the deaths of the race that affect it; it is not the illnesses, but the illnesses which ended in death, that change the race. Nearly all microbic diseases originated in the Old World. It is disease which has dug the foundations of Empire. Disease created an enormous void which the English have filled. More than anything else, disease has founded a permanent Empire. We can hardly hope to continue indefinitely in Africa and in India, because the natives will gradually get rid of us. We have practically a permanent hold in Australia and New Zealand because we are used to all the diseases and nothing can displace us. So soon as the race undergoes protective evolution it is not conceivable that the misfortunes of the individual could injure his successors.

Sanitary and Outdoors.

It may be, says the *Traveller*, as Max Nordau insists, that the progress of civilized society goes hand in hand with mental degeneration. It may be, as Oliver Wendell Holmes suggested, that everybody is insane in some particular or other, or that, as Dr. Harvey W. Wiley says, "nearly every man and woman at some time in their lives verge upon insanity." Drink and drugs, with the rush and worry of life, the roar of machinery, the pressure of social duties, the overwhelming of the senses and straining of attention by the innumerable events and irritations of ex-

intense in great cities — these are held to be responsible for the wrecking of human minds to an extent undreamed of in the old simple days.

But whether this pessimistic analysis is true or not, it may be largely disregarded if the people will but follow a plain and easy recipe. Read this bit of pastoral prose poetry from Governor Johnson's message to the school children of California in urging them to observe "Bird and Arbor Day":

"The love of birds and trees is one of the healthiest emotions of the human heart. It may well be cultivated. There is no more innocent and no more gratifying source of enjoyment than intelligent interest in the beauties of nature. Learn to know the calls and plumage of our birds, the varying foliage of our trees; grow to love the quiet places where they may best be studied, and you will be happier and better citizens."

The sunshine, the open places, the voices of nature! There's medicine for the sick mind. Get into the country all you can, bask in the sun, breathe the fresh air, get acquainted with the birds and flowers and trees, play in the water and come into intimate contact with the wholesome soil. Then you may laugh at nerves and brain fag, in the full and satisfying consciousness of a sound mind in a sound body.

The Real Test of Vaccination.

Nowhere more than in communities that offer a virgin soil for smallpox do the beneficent effects of vaccination stand out with remarkable distinctness. The *London Lancet* remarks that the reason for this is not far to seek. The issue in such cases is not confused by any such side issues as partial protection, worn-out vaccination, the respective shares of long-continued sanitation and vaccination, and so on. It is a clearly defined issue between the results of the epidemic among those people who have never been vaccinated and those who are efficiently vaccinated sufficiently in advance of infection for vaccination to become operative as a preventive. Such an instance is afforded in a recent report (with a copy of which we have been favored) by Dr. Victor G. Heiser, Passed Assistant Surgeon, United States Public Health and Marine Hospital Service, and Chief Quarantine Officer of the Philippine Islands. Dr. Heiser says: "During December, a person afflicted with smallpox was transferred from San Jose, Antique, to the Island of Caluya, which is a small isolated island south of Mindoro, the inhabitants of which have heretofore not been systematically vaccinated. An old women took some of the contents of a pustule from the smallpox case shortly before death and commenced to vaccinate (inoculate) a number of the inhabitants; smallpox in epidemic form soon resulted. The population of Caluya and nearby islands is about 2,000. Approximately, 1,000 cases of smallpox occurred before the facts became known to the outer world. Vaccinators properly equipped were immediately sent to Caluya. They vaccinated 800 of the remaining 1,000 persons. Of these, not one contracted smallpox who had a successful vaccination, that was two weeks old. The undersigned (i.e., Dr. Heiser) visited 10 families, ranging from five to eight in number. In six of these every member was stricken with smallpox. A physical examination showed that they had no vaccination marks. In two other families six persons were stricken and two escaped. A physical examination showed that of the six stricken members not one had been vaccinated. The two remaining members had successful vaccination marks. Upon inquiry it was learned that they had visited Calapan a year previously and were vaccinated while there. In two other families that lived in the midst of a smallpox stricken village there were no cases of smallpox. A physical examination showed that they had good vaccination scars. Further inquiry elicited the statement that they had but recently come from another island where they had been vaccinated. In one house one person was found with varioloid. Upon inquiry it was learned that he had been vaccinated during childhood. Net result: Community of 2,000 population; 1,000 unvaccinated persons contract smallpox; 400 die; 800 are protected by vaccination; no cases occur after the incubation period was passed; no deaths occur. The remaining 200 are semi-civilized and fled from the vaccinators, and their condition is unknown." This is only one of the object-lessons that the Philippine Islands, under the administration of the

United States Government, have afforded us as to the protective value of efficient recent vaccination against smallpox. We cannot hope that it will influence those opposed to vaccination, but it should nevertheless be put on record and published as widely as possible.

The Insanity Plea.

Supporting the theory once insane, always insane, and arguing against setting free those who have been imprisoned for crime, in reality or allegedly committed as the result of insanity, Dr. J. F. Baldwin has written a letter to *The Lancet-Clinic*, a Cincinnati medical journal.

The letter touches upon a vital topic and one which for years has been given extensive study and attention by prominent alienists and physicians. It reads:

"Some 15 years ago a young man in my city, Karl Doh, employed as a tailor, entered the workshop as usual, drew a revolver and shot dead a fellow employe. No words were spoken, no opportunity for defence was allowed, and the killing seemed to be a cold-blooded, predetermined murder. A few weeks later I was asked by his attorneys, one of them an ex-Supreme Court judge, to visit the man in jail, as they expected to offer insanity as their defence. I promptly objected, and told the judge I was tired of that sort of defence, but after listening to his statements I consented to examine the prisoner.

"I found that he had always been more or less peculiar and that there was a good deal of mental disturbance in the family history. He had tried to commit suicide on his mother's grave, shooting himself several times in the left breast. I was able to develop the scars to determine the truth of the statements of himself and friends as to the number of bullets (five) which he had fired, the number that had gone completely through, and those that had been cut out by the surgeon.

"I do not now recall all the points in the case, but it was very evident that we were dealing with an insane man, and that he had murdered his fellow-workman while under the delusion of persecution. I brought out all these facts at the trial, and the result was that he was sentenced to the penitentiary for life, as the only safe place for him. I assured his friends that he would be all right so long as he remained in the penitentiary, but that if they ever attempted to secure his pardon I should oppose it on principle.

"They seemed to acquiesce in my view, but after a few years attempts were made to secure his release. He had been an absolutely model prisoner and the penitentiary officials joined with his friends in recommending a pardon. I heard of it, and appeared before the Pardon Board to explain the situation, and the petition for pardon was promptly rejected. Later, renewed efforts were made before Governor Harris. I again heard of it, and promptly took the matter up with Mr. Flickinger, the Governor's private secretary, and again the petition was rejected.

"Less than two years ago, however, and greatly to my surprise, the daily papers announced that he had been pardoned by Governor Harmon. In the interval, I had been approached by some of his friends and had agreed to withdraw my opposition to the pardon if the governor would appoint a special commission of expert alienists to investigate his case. If they decided that he was a safe man to be at large I would have no objections to the pardon. I recommended such action personally to Governor Harris, but the suggestion was not carried out.

"I have no doubt that the pardon was secured from Governor Harmon without any knowledge on his part of the patient's condition, or that there was any opposition to the pardon. I had felt that so long as he remained in the penitentiary, with absolute uniformity of environment and habits, and with entire absence of excitement, his mental equilibrium would not be unbalanced; and that equilibrium was too unstable for him to be safely at large.

"I heard nothing about him until recently the daily papers announced that he had committed suicide. That his mental unbalance was thus directed against himself rather than against others was fortunate, but can be regarded, I think, purely as a matter of good luck.

"I report the case as an illustration of the necessity of very great care in the setting at large of our criminal insane.

Open Mail

To the Editor, The Public Health Journal, State Medicine, and Sanitary Review:

Disease Carriers.

Sir:—In *The Public Health Journal* for September, one of the many items furnishing food for thought is that on page 433, concerning Cholera Carriers and Diseases of Childhood.

The discovery that human beings, after apparent recovery from typhoid fever or cholera may continue to harbor these micro-organisms in their bowels, give them off in their stools, and through these transmit the disease to others, opens up possibilities hitherto unsuspected. It is certain that other affections may be similarly carried and transmitted. I have detected dysenteric amœbæ in the stools of a man who had suffered ten years of ill-health, following a mild attack of dysentery. The list may be considerably enlarged if, as is now held, pulmonary tuberculosis effects its first lodgment through the agency of infected food taken into the stomach.

Dr. De Wolfe suggests that the exanthemata and other infectious maladies of childhood, especially diphtheria, might be preserved and imparted in the same manner. The suggestion is too important to be dismissed with contempt. We constantly mistake by judging new propositions from the standpoint of the completeness of our own knowledge. Those who realize the fragmentary condition of the totality of human knowledge are little disposed to pronounce anything impossible.

This matter brings into renewed prominence the subject of intestinal antisepsis. We are not disposed to stop with the detection of this mode of transmitting infection, but must seek for the means of prevention. If the maladies thus transmissible can be influenced by intestinal antiseptics, such as are now employed by many thousands of practicians, it should be universally known and the practice considered obligatory. In America more than 50,000 physicians employ as intestinal antiseptics the sulphocarbolates of zinc, lime and soda. The clinical evidence in their favor is overwhelming. Their use has steadily grown each year since 1880, when they were first introduced in human practice.

At first they were given on the crude theory that they "killed the bugs" in the stomach and bowels. To this it was objected that it was impossible to chemically disinfect the tortuous bowel, insofar as to free it from all micro-organisms. But by this time the results of the treatment had proved so markedly superior to all that had preceded it, that its advocates refused to abandon it for want of a plausible explanation of its action.

In time it was ascertained that better results were obtained if the bowels were swept clean of fœcal material before the sulphocarbolates were administered, and these were then given in doses to correct and prevent all abnormal odor of the stools. The effect was so decided that it was estimated that more than one-third of the symptom-totality disappeared under this treatment, reducing the gravity of the attack to that extent. No ill effects have ever been charged against the sulphocarbolates when employed in chemical purity.

Even yet it is uncertain how they act. The stools under their use become odorless and normal in all respects, fever is moderated, neurotic symptoms subside, the digestion is restored. I have searched in vain for a case of fœcal transmission of typhoid fever, or dysentery, where this method has been applied.

Turning to Major Drum's analysis of the Ottawa outbreak, I ask if it could have been possible, had the early cases along the watershed been thus treated antiseptically.

Those who advocate the intestinal antiseptics are right or wrong. If wrong, this has never been proved, nor has any plausible explanation been given for their practical success. If the sulphocarbolates are not the best agents for the purpose, we should be shown what others are more effective against each of the three maladies, now known to be harbored by "carriers"—typhoid fever, cholera and amœbic dys-

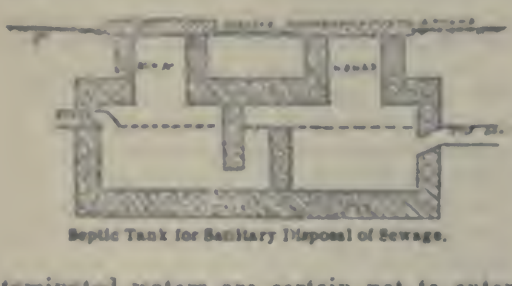
entery. The stools of diphtheria patients should be studied for the Loeffler bacilli, during the attack and after it. The way seems open for a most important advance in the prevention of infectious disease.

WILLIAM F. WAUGH, M.D.,
Chicago, Ill.

Some Suggestions on Individual Sewage Disposal.

Sir:—Before the discovery of microbes very little attention was given to the disposal of sewage in order to make places more sanitary. Not only were populous cities then swept by cases of typhoid, cholera and kindred bowel troubles, but even sparsely settled country districts were visited by the same dreaded diseases. Since then more careful attention has been given to sewage disposal, so that now diseases caused by insanitary methods in disposing of sewage are much less common.

The common country closet, which generally consists of a hole dug in the ground over which is constructed a somewhat rude shed, has a larger sick and death list to its credit than most any other insanitary agency. It is hardly ever screened to keep out flies or placed in a position where its contaminated waters are certain not to enter wells and other sources of water supply. Surprising as it may seem, people who are otherwise scrupulously clean, permit the most insanitary conditions imaginable to exist here.



Septic Tank for Sanitary Disposal of Sewage.

Even if no sewers are available insanitary closets should not and need not exist. All vaults should be well screened and the "dry earth" system installed. This can be done by getting dry dust from the public highway and placing it in a box in a corner of the closet. By means of a small shovel a sufficient quantity of the dust should be used every day to keep the excrement well covered. This will prevent the escape of all odors and even when the vault is not screened flies will not be attracted or be able to gain access readily. If possible, the vault should be lined with cement.

However well the dry closets may be taken care of, they can never be as sanitary and satisfactory as the water carriage system which has been used for a long time by our cities, and even now is operated quite successfully in farm and rural homes that are entirely dependent upon their own source of water supply. Such a system, aside from the cost of the well or other source of water supply, can usually be installed at a cost which need not exceed $250 or $300, and should consist of an elevated tank, sink in kitchen, bathtub, closet and wash bowl in bathroom, and a method of sewage disposal something like the one illustrated in the accompanying drawing.

For the disposal of sewage the septic tank is a much better and more sanitary way than to have the sewer from the closet empty directly into some stream or cesspool. By having the sewage carried into a tank where it may be allowed to remain for some time, bacteria which live only in dark reservoirs will attack the solids, decompose them, and finally purify the sewage. The insoluble particles will settle to the bottom of the tank. These need to be removed once in about every two years. The purified sewage can be emptied into a field or tile drain without fear of contamination. If no such outlet can be given, it can be distributed by underground irrigation. This can be done by giving the drain very little fall, say one inch every 15 or 20 feet, and making it at least 50 feet long. This will distribute the seepage so that no particular spot will become wet and soggy.

This septic tank should be at least 3 by 4 by 8 feet and constructed of concrete. The incoming tile should be of good sewer pipe cemented at the joints and have very little drop to the surface of the water so as to disturb the sewage as little as possible, for these bacteria work best in a quiet place.

C. D. STEINER,
College of Agriculture Ohio State University.

Meetings and Reports

DOMESTIC

Child Welfare Exhibition.

The promoters of the Montreal Child Welfare Exhibition to be held in October 1912 are sending out circulars asking co-operation. The movement is certainly worthy of help from all quarters. The exhibition will be replete with everything appertaining to child welfare. The secretaries are W. H. Atherton, Ph.D., 62 Beaver Hall Hill, and L'Abbe J. O. Maurice, D.Th., LL.L., 835 Ontario St. East.

Muskoka Free Hospital for Consumptives.

A member of the staff of *The Public Health Journal* had the pleasure of visiting the Muskoka Free Hospital for Consumptives recently and noting the advances that have been made in this method of treatment.

An excellent feature in this hospital is that each patient is supplied with a card for his daily report. He is requested thereon to state whether or not he is being cared for satisfactorily, in regard to meals by placing his comment after each meal which is named thereon, and in regard to room, nursing and general matters by making his comment in the same way.

Everyone upon entering the institution subscribes to regulations which include the following:

Patients must spend at least eight hours out of doors daily unless excused by the physician; they must be out of the wards before 9 a.m.; they are expected to follow the advice of the physicians regarding dress, exercise and diet; and as food forms an important part of the treatment, patients are urged to take as much nourishment as possible.

Patients are required to use for expectoration at all times the cuspidors provided for that purpose. Spitting on the ground, floors or into basins, closets and sinks is absolutely prohibited. For the health of all concerned this rule will be strictly enforced; all patients are required to do some regular daily work unless excused by the physician-in-charge; conversation between patients regarding their symptoms or any subject relating to illness should be strictly avoided at all times.

Earl Grey's Interest in Public Health Matters.

Earl Grey's interest in matters appertaining to public health has been pronounced on all occasions. Upon his recent visit to the Canadian National Exposition he was very much interested in two of the models which were loaned by the Chicago health department for use in the Ontario Board of Health exhibit arranged by Dr. McCullough. The Governor-General personally requested permission from the Chicago Board of Health to duplicate these models for Canadian schools, and permission was granted by Health Commissioner Young. One of the models portrays by means of sleeping dolls and smoke the unhealthy effect of sleeping in a poorly ventilated room. The other model shows the great death rate due to improper care of children.

Cinquieme Convention Annuelle des Services Sanitaires de la Province de Quebec.

La "Cinquieme Convention annuelle des Services Sanitaires de la Province de Quebec," aura lieu à Montréal durant l'eté de 1912.

Nous comptons que les municipalites de Quebec, se feront un devoir d'y déléguer leurs officiers sanitaires.

Les officiers pour cette Sème convention sont:

Président, Dr. E. P. Lachapelle, Commissaire de la ville de Montreal.

Secretaire, Dr. J. A. Baudouin, Directeur du Bureau d'hygiene de Lachine.

A Civic Guild Bulletin.

The Toronto Civic Guild is issuing an excellent little monthly bulletin; the month of May last saw its first issue. Each number is illustrated and gotten up in the best

style and is a credit to the secretary, Mr. W. S. B. Armstrong, and the Toronto Civic Guild. The August number took up Toronto's civic debt; a consideration of better housing; the proposal to improve the approach to the Don bridge; the question of street width; building lines on residential streets; height of buildings, and the conservation of the Rosedale ravine.

Toronto Board of Health Bulletin.

The Health Bulletin issued by the Department of Health for Toronto is a compilation of good extracts and added comments; the first issue was that of May. It is intended to issue the Bulletin monthly to the citizens of Toronto and others who may be interested in health matters, its purpose being to keep the people informed of the work of the health department and give advice about different diseases and epidemics, the times at which they are likely to occur and the best means of combatting them in the home.

Infant Mortality.

Dr. Helen MacMurchy's second report on "Infant Mortality" should be read and re-read with care by those who have the real interests of our country at heart. These interests we are all supposed to have. Dr. MacMurchy addresses her report to the Honorable W. J. Hanna, Provincial Secretary for Ontario, and covers her topic in a very thorough and convincing manner. She points out that infant mortality is such an extensive subject that it may be approached from many points of view, and there is no part of sanitary administration which does not bear a relation to it.

Dr. MacMurchy takes up the difference between the poor man's baby and the rich man's baby, saying that it should not be made too expensive to bring up a baby; that such expense is bad for the race. "What we want," Dr. MacMurchy remarks, "is the ordinary Canadian baby. We have the fathers and mothers, and we must see that they get good milk, good air, and good water. It is the mother that we should specially do something for. She is the one, and the only one, who can save the baby. If the 'own mother' is dead, then adopt a mother for the baby. Australia does it. Why not Ontario? It is the mother that the Government should get behind."

Dr. MacMurchy's report is fully illustrated and contains statistics of the utmost value.

The Bulletin of the City of Winnipeg.

Dr. A. J. Douglas, Medical Health Officer of Winnipeg, is to be congratulated on the appearance of Winnipeg's Health Bulletin. The motto of the Bulletin is that "No sanitary improvement worth the name will be effective whatever acts you pass or whatever powers you confer on public officers unless you create an intelligent interest in the public mind." Judging from the first two copies before us the Bulletin will certainly create this interest. In his foreword Dr. Douglas says that the issue of the Bulletin marks a new departure in the work of the Winnipeg Health Department; its object is educational; it is proposed to set forth in its columns from month to month such statistics as may be of interest together with information and advice at each particular season of the year that may be helpful; to afford particulars with regard to prevalent diseases and to suggest what measures should be taken to restrict and prevent them. The ambition of Dr. Douglas and his Health Department is to make Winnipeg the healthiest city on the Continent.

Health Circular No. 28, Nova Scotia.

Circular No. 28 of the Public Health Department of the Province of Nova Scotia reaches the high standard set by Dr. A. P. Reid.

It takes up the Extirpation of Tuberculosis, Infectious Diseases, Poliomyeletis, Pneumonia, Cholera Infantum, Disinfection, Smallpox, and contains a number of valuable statistics and extracts from other publications.

"Let us think," says Dr. Reid. "Tuberculosis is curable. Why is it not cured?" And speaking of publicity — "Unless there be knowledge of the disease (tuberculosis) centres the authorities are unable to act efficiently. They are unable to prevent the lapse of curability into incurability or to arrest its spread from a centre. Hence the authorities should have notification of every case of the disease, no matter what its stage may be, and noti-

fection should be compulsory."

The Public Health Journal is pleased to note two extracts from its pages in Circular 28: a letter from A. F. on "Insanitary Schools," and "Some Household Insects and Their Neighbors," by F. W. Waugh, of Toronto.

Twenty-ninth Annual Report of the Ontario Board of Health.

The officers of the Ontario Board of Health for the year of 1910, which year this report covers, were Dr. Charles Sheard of Toronto; Dr. Milton Ira Beeman of Newburg; Dr. William R. Hall of Chatham; Dr. John W. S. McCullough, taking the place of Dr. Chas. A. Hodgetts as Secretary and Chief Health Officer; Dr. John A. Amyot, Provincial Bacteriologist; Dr. W. T. Connell of the Kingston Laboratory; F. N. Lancaster, B.A.Sc., Provincial Chemist; Medical Inspector Dr. R. W. Bell, and Mr. George E. Young, the Sanitary Inspector.

In his resume of the transactions of the board for 1910, Dr. McCullough offers a tribute to Dr. Charles A. Hodgetts for the excellent work done during that officer's administration, and recites the unanimous resolution of his Board in that regard. Dr. McCullough also mentions the loss occasioned upon the departure of former Provincial Chemist, Dr. G. G. Nasmith, who became Chemist of the Laboratory of the city of Toronto. He then takes up the report of Dr. Nasmith and Dr. T. D. Archibald regarding the Lindsay ozone purification plant, and points out that the results of this examination authorized by his Board tended to show the system installed by Lindsay as utterly inadequate for the purification of its water supply — "This question, it would seem, is now settled without any doubt, and the results vindicate completely the position taken in the matter by the Provincial Board of Health. It is also an object lesson for municipalities undertaking such experiments without the advice and sanction of the Board, as required by law. The town of Lindsay has spent upon this plant a large sum of money, for which, unfortunately, it has received no value except experience."

In dealing with tuberculosis, Dr. McCullough's words are: "It is a communicable disease preventable by proper care, a disease with a tendency to natural cure when associated with good food, good living conditions, avoidance of drink and all forms of intemperance, pure air, sunshine and a cheerful and optimistic conception of the disease." He gives the results of inspection of certain abattoirs, pointing out that when the regular buyers for such abattoirs find the condition of tuberculosis among animals to prevail in certain localities, they naturally avoid buying there so that they may not suffer financial loss —"What is the result? The animals are thereupon sold to local butchers and are consumed in the country and smaller towns where there is no inspector. If we are to have any results in the prevention of tuberculosis and other diseases we must have some system of rigid inspection of all meat used."

The appendix of Dr. McCullough's Report is taken up by reports of city health officers. We note, however, that there are a number of such reports missing, and presume that the organization in Ontario is not tyrannical enough, or at least, has not the means of enforcing the rule that every municipality in the jurisdiction shall have reports sent to the chief health officer.

This twenty-ninth annual report is well illustrated, the illustrations relating to the Lady Grey Hospital for Tuberculosis at Ottawa being particularly noteworthy.

Maritime Medical Association.

At the last annual meeting of the Maritime Medical Association in Halifax it was decided by unanimous resolution to discontinue the existence of the Association. This was done in carrying out the policy of forwarding the interests of the Canadian Medical Association. The Maritime Medical Association was the only interprovincial association in Canada, and the way seems now open for a better union between provincial societies and the all-Canadian association, following the reorganization of the profession as proposed by the C. M. A., throughout the Dominion.

Inspection of Schools and the Ontario Medical Council.

The Ontario Medical Council passed the following resolution regarding the inspection of schools at its recent annual meeting:

Whereas, The question of medical inspection of schools and scholars is now prominently before the peoples of various nations; and

Whereas, The Legislature of 1907 of Ontario authorized trustees to provide and pay for the dental and medical inspection of pupils as the regulations may prescribe, or, in the absence of regulations, as the board may deem proper:

Resolved, That this Council, in the interests of school children, respectfully recommend to the Minister of Education the advisability of taking a physical census of the school children, with the view of comparing the health and physical condition of children in urban and rural districts and in the meantime further recommend the training, as in England, of the students in our model schools, normal schools and faculties of education in such a knowledge of school hygiene as will enable them to recognize common defects and diseases of children.

This Council further recognizes that while the employment of school doctors and nurses, giving all their time to medical inspection, would be the ideal plan for every municipality in the Province, yet it is of the opinion that the public are not sufficiently familiar with the benefits of medical inspection to be ready to meet the very considerable expense involved in inaugurating such a comprehensive system at the present time.

Guarding Against Cholera.

In view of the European cholera situation, Dr. F. Montizambert, Director General of Public Health for Canada, in circularizing his quarantine officers, the commissioner of customs, ship owners, agents, and others concerned, says: "I am directed by the honorable the Minister of Agriculture, to inform you that, in order to diminish the danger of the introduction of Asiatic cholera into this country, he has issued the following orders:

"All steerage passengers arriving at ports in Canada from ports or places infected with cholera, shall be subject to bacteriological examination at the quarantine station of the port, and shall not be permitted to pass such station nor to make customs entry, until it has been determined by such examination that they are not cholera-bacillus carriers. This regulation shall apply until further notice to steerage passengers from Italy coming directly or via intermediate ports.

"For all cholera contacts arriving on vessels upon which cholera has occurred, the period of detention under quarantine observation shall be 10 days, unless after 5 days' detention they are found not to be cholera-bacillus carriers."

Royal Recognition of St. Johns' Ambulance Association.

His Majesty King George V., sovereign head and patron of the Grand Priory of the Order of the Hospital of St. John of Jerusalem in England, has approved of the following honors to be conferred upon the officers of the Canadian branch of the St. John Ambulance Association:

Knights of Grace, Dr. F. Montizambert, I.S.O., president of the Canadian branch, Ottawa; Col. G. Carleton Jones, D.G.M.S., Ottawa; Col. the Hon. J. M. Gibson, Lieutenant-Governor of Ontario; Sir Edward H. Clouston, Montreal.

The Public Health Exhibit of the Ontario Board of Health at the Canadian National Exposition.

The very great interest manifested by the thousands who saw this exhibit at the Canadian National Exhibition held in Toronto this year is not only an evidence of the excellent and practical character of the exhibit itself, but also of the desire of the Canadian people to be in the forefront in the matters pertaining to this important branch of education. Sanitary or public health matters have within the last few years made giant strides. People are rapidly becoming concerned about the means of prevention, rather than the cure of disease, and what with the information accumulated in respect to the necessity for pure water, disposal of garbage and sewage, of the dangers from flies, from the careless spitting consumptive, of the necessity of ventilating our houses, churches, places of amusement and business, there seems no better way of distributing this information than by such an exhibit as that given by the Provincial Board of Health for this Province.

This exhibit is a further development of the travelling Tuberculosis Exhibit in-

stituted by the Board during the last few years. Last year it was shown in a railway car about the Province. This year for the first time it embraces a large variety of subjects relating to public health and it is the intention of the Board to continue this educational feature upon a larger scale. Although the space allotted to the exhibit was so limited that a large portion overflowed to a tent annex and a considerable portion remained unopened for want of space, there was even under such difficulties a remarkable display, material being furnished as follows:

Paper Water Cups and Brackets—
American Water Supply Co., Boston,

Sputum Cups—
Mainicke & Co., New York.

Paper Cups, Spittoons, Paper Towels, etc.
Stone & Forsyth, Boston.

Sputum Cups, Water Cups, etc.—
Seabury & Johnson, New York.

Paper Towels, etc.—
Scott Paper Co., Philadelphia.

Paper Blankets—
Cabinet Mfg. Co., Quincy, Ill.

Biological Products—
Burroughs, Wellcome Co., London.
Parke, Davis & Co., Walkerville.
H. K. Mulford & Co., Philadelphia.

Milk Laboratory—
City Dairy Co., Toronto.

Sanitary Drinking Fountains—
Springfield Sanitary Drinking Fountain Co., Chicopee.
Flint Sanitary Mouthpiece Co., New York.
S. W. Tobey, Wausau.
Marsh Temy Co., Muskegon.

Water Filters—
Hygeia Filter Co., Detroit.
Jarvis Sanitary Filter Co., Toronto.

Water Stills—
Consumers' Gas Co., Toronto.
Lymans, Ltd., Montreal.

Charts Illustrating Domestic Water Supply—
Ontario Wind Engine & Pump Co., Toronto.

Model of Garbage Destructor—
Heenan and Froude, Manchester, England, per Laurie & Lamb.

Knopf Window Tent, Microscopes, Electrical Centrifuges—
J. F. Hartz Co., Toronto.
The Provincial Board of Health, Ontario, further displayed a very fine collection of handsomely mounted photographs of sanatoria in Great Britain, Germany, Scandinavia, United States and Canada, with plans of various ones; models of tents, sanatoria and shacks for the care of consumptives and models of sanitary conveniences and of the various types of sewage disposal plants.

Disinfectants—
West Disinfecting Co., New York.
Parke, Davis & Co., Walkerville.

Portable Sanitary Closets—
Red Cross Sanitary Co., Grimsby.
Parker White, Limited, Winnipeg.

Fly Pest Exhibit—
C. Gordon Hewitt, D.Sc., Ottawa.

Charts, Banners and Literature—
Toronto Health Department, Toronto.

In addition to these, three exhibits stood out prominently and formed a centre of attraction. These were:

1st. The splendid charts of the American Association for the Conservation of Vision.

2nd. The exhibit of the American Association for the Prevention of Infant Mortality, and

3rd. The various practical charts, healthgrams, and banners and the mechanical models loaned by the Department of Health, Chicago. This exhibit was in charge of Dr. C. St. Clair Drake, the designer of the models. The first one illustrated infant mortality. Three thousand five hundred dolls affixed to the wall represent the babies who died of preventable disease in Chicago last year. In front of this is a revolving cylinder operated by clockwork with a number of larger dolls, every fourth one of which is chopped off by the Angel of Death. "One out of every four drops into the grave, and 70 per cent. of this might be prevented," is the startling object lesson which day after day attracted the attention of thousands.

None the less interesting was the model illustrating ventilation. Two rooms of equal size are shown in which there are dolls in tiny beds. At the ordinary breathing rate by means of an ingenious contrivance smoke is seen to issue from the noses of the dolls. In the one room which has its doors and windows open the atmosphere remains clear. In the other without ventilation the air is soon quite murky.

These models excited much interest. All day the space about them was crowded and the comments upon the value of the lesson taught were numerous. Indeed, His Excellency Earl Grey, who visited the Exhibition, said they were the best educational features of the Fair, and he asked how he could secure them to exhibit in Ottawa and Montreal.

Each day in the demonstration room of the Women's Building one of a series of health talks was given by various ladies and gentlemen who are interested in preventive medicine. The lectures were interspersed with moving pictures illustrating good and bad milk conditions, the danger from flies and from tuberculosis. Among the lecturers were Dr. Hastings, City Health Officer of Toronto; Dr. Helen MacMurchy; Dr. Connell, of Kingston; Dr. C. Gordon Hewitt, of Ottawa; Dr. G. D. Porter, Dr. W. H. Doherty, Professor Dean and Dr. Amyot.

The whole exhibit was assembled and managed by Dr. J. W. S. McCullough, Chief Health Officer of the Province.

INTERNATIONAL

Great Lakes International Pure Water Association.

Canada and the United States, in Chicago on the 29th of September, joined in a reciprocity movement to keep the great lakes clean.

An organization, to which the Governor of each State and the Premier of each Province bordering on the great lakes or the St. Lawrence River will send an official delegate was formed at a gathering of city health officers and sanitary engineers from both sides of the international boundary line.

The new society adopted as its name the Great Lakes International Pure Water Association and elected Dr. C. E. Ford, health commissioner of Cleveland, as temporary president. Dr. Charles J. C. O. Hastings of Toronto was elected temporary vice-president, and Dr. W. A. Evans, of Chicago, was chosen as editor.

As soon as the various governors and premiers have had time to act, permanent officers will be chosen. The officially appointed delegates will be the only ones having voting power, but others interested in the subject of pure water supply and kindred matters will be permitted to join and take part in the sessions.

A movement for laws preventing the discharge of sewage into the great lakes, already under way in Canada, probably will be one of the first matters taken up by the new society.

The society put itself on record as in favor of grouping cities and towns similarly situated on any body of water into sanitary districts for co-operating in securing a pure water supply.

More of the Great Dresden Exhibition.

Dresden's great international hygiene exhibition has made that city the centre of interest for all Europe; and this will last for the next year or two.

All nations responded to the invitation to co-operate in discovering and displaying whatever endangers, protects and restores the health of mankind — physical, moral and social. For many years over 3,000 specialists in all parts of the world have been gathering the exhibits. For several years hundreds of experts have been at work arranging their displays. The results are marvellous. At present fully 300 congresses of experts are gathering to study and discuss them.

In one great building, called "Der Mensch," (the man) every conceivable device, model and description is shown to exhibit the origin, growth, disease, suffering and death of a human being. The heart action, for instance, is seen actually at work circulating the blood, which is measured as it is lifted and propelled through the arteries. Disease due to neglect, to indulgence in the vices of lust and drink, to occupational and housing conditions, to heredity, infection and contagion, are boldly and baldly displayed, but always with scientific accuracy and with an important purpose.

In the historical collection there is a series of realistic reproductions illustrating the evolution of the house for human habitation. The sports which contribute to health are not only depicted on paper, in picture and by model, but are produced in action by sporting associations and

champion players assembled for the purpose from many lands.

Industrial conditions are classified in no less than fifteen sections. All this wonderful array is intelligible to the plain observer, but the expert also finds his data classified in strictly scientific form. It is safe to say that no other such contribution has ever been made to the health of mankind or to prevent and alleviate suffering as in this exhibition at Dresden. It should never be scattered, except to be shown elsewhere. It ought to go around the world.

International Municipal Congress and Exhibition.

The days from September 17th to 30th inclusive witnessed in the Coliseum at Chicago one of the finest exhibits that has ever been held regarding municipal matters. Most of the wonderful improvements adopted during recent years by the various large cities of the world were shown and described by means of small models, pictures, charts and lectures: the exhibit being, in fact, a great municipal museum in which miniatures of the good things in existence, under civic control, were gathered together; New York with its subway, its recreation piers, its docks and great buildings — Montreal showing its beautiful river front — Cleveland, its great group plan, its schools and public works—Port Sunlight, the co-operative town of England — Nuremberg, the antique city of Germany — Rotterdam, from cleanly Holland — the "Commission Rule" display of DesMoines—and other exhibits of endless interest.

Among the general discussions taking place at the Congress was that on ventilation and its investigation from a practical standpoint as it exists in large cities. And not the least things of interest were the comparison of the old and new methods of fire fighting and the Chicago Woman's Civic Clubs' display illustrating the co-operation between the city and the home.

Interstate Association of Medical Examiners.

A matter of considerable interest at the recent meeting of the American Association of Medical Examiners in Los Angeles was the affiliation made between the Interstate Association of Medical Examiners and the American Association, and a name was adopted under which the divisions of Washington, Oregon, British Columbia, Idaho, Montana and California will be included, namely, the North West Section of the American Association of Medical Examiners.

To be eligible for membership in this Association a physician must be a regular examiner for some life, accident or liability insurance company.

The next regular meeting of the Association will be held in Spokane.

UNITED STATES

Sense and the Sex Question.

The school authorities of Oakland, Cal., a city of 140,000 inhabitants, inaugurated with the opening of the schools in that place in September a course of lectures and class instruction in sex hygiene. The suggestion advanced in this journal some time ago that every city should employ for the public schools and at the public expense two instructors in sex hygiene and that they should be a man and a woman, is exactly what is being carried out in Oakland. It is the first city in the United States to undertake anything of the kind, though there is on foot a movement to do the same thing in Sacramento.

Of course there are reactionary and ignorant prudes in Oakland, who are blushing violently and noisily at this "destruction of modesty and sense of propriety." They would rather the children would learn sexuality by inuendo, by double entendre, by association as they get older with procurers and macques. It is ignorance in youth and instruction from questionable sources later on that leads girls to betrayal and the brothel and boys to the brothel and the hospitals. In the name of the Almighty, why cannot horse sense have some influence with the average parent, when souls and bodies of children of both sexes are at stake!

The folly and barbarity of prudish parents is responsible for from 50 to 60 per cent. of the inmates of the insane asylums, for half the "specialists" in medicine; for boys, girls, men and women who die, some of them insane, or blind, or deaf, or speechless, or in idiocy. Straight up and down ignorance upon the part of parents, who would do better by their children if they realized what should be done in the way of instruction and warning, results in the same effects many times. Ignorance excuses no one in physical and moral law any more than in statutory law.

Social workers and the medical fraternity are agreed that sexual ignorance has desolated more homes and ruined more lives than any inherent laxity of morals, and they all decry the persistent prudery that has already wrought such havoc in the rising generation.

The prudes are the right bower of the madames, the macques, the "specialists," the hospitals, and the asylums for insane and idiots.

United States Campaign Against Dust.

A warning against the dangers of dust has been issued by the National Association for the Study and Prevention of Tuberculosis, in which it is shown that the percentage of deaths caused by tuberculosis in dusty trades is more than double that for all employed men in the registration area of the United States.

As a result of the dangers from consumption to those exposed to various forms of dust, and at the request of the National Association, the United States Government has recently appointed a commission to work in co-operation with state authorities in making an investigation into the conditions of the metal mining industries in the United States, with special reference to diseases of the lungs. The work of the commission engaged in this special task will follow lines somewhat similar to those worked out by the Royal Commission of Australia, whose report was recently received in this country.

"Dusts are of three kinds," says the National Association; "factory, street, and house dusts." The statement refers to the results obtained through investigations made for the Bureau of Labor by Frederick L. Hoffman. While among males generally in the registration area of the United States 14.5 per cent. of all deaths are from consumption, the mortality among grinders from this disease is 40.2 per cent., and in hardly any of the dusty trades is it below 25 per cent. The percentage of deaths from tuberculosis among all those exposed to metalic dust is 36.9 per cent.; to mineral dust, 28.6 per cent.; to vegetable fibre dust, 28.8 per cent.; to mixed animal and other forms of dust, 32.1 per cent.; to street dust, 25.5 per cent.; and to organic, or dust coming from the articles being manufactured, 23 per cent.

The statement speaks also of the dangers from house dust, especially in rooms that are not well ventilated. The association warns against dry sweeping, and against the use of the feather duster, or other devices that scatter, but do not take up the dust.

Since the ordinary dust blown about in the streets is impregnated with disease germs, the National Association urges the adoption of methods that will prevent the further dissemination of such bacilli. It also urges for the coming months of fall and winter more open windows and more fresh air in house, shop, and school-room.

The Cincinnati Plan.

Appreciating that there has arisen a feeling that medical teaching is far from perfect and that the attention of students has been too completely directed to diagnosis and treatment and not enough to prevention, the University of Cincinnati has adopted the co-operative system of instruction in its college of medicine. This is the system that has been responsible for the remarkable success of its engineering school and that has become widely and favorably known as the "Cincinnati Plan." As applied to medicine, it marks, we believe, a distinct departure. The first two years of the curriculum is to remain unchanged, but during the last two years the student will divide his time equally between active service in the city Board of Health and the regular studies of the college. In the former capacity he will do chemical and bacteriological work, sanitary inspection and fumigation, will trace the sources of infections, make food, dairy, bakery and school inspections, practise

preventive inoculation and vaccination and serve in the municipal dispensaries. In every phase of laboratory activity the student will be given experience. His record in this practical work will count toward his general scholastic standing.

It requires no professional mind to understand the manifold virtues of this proposition. The common complaint against young college graduates, particularly those who seek to break into social service, is that they lack first-hand experience. It is customary to teach hygiene by lectures and recitations, rarely by observation and almost never by the laboratory method. The newly-made physician has some practical knowledge of the *methods of sanitation*. In other words, a part of his education must be gotten after he has left college. And though it is still admitted that contact with the world in the pursuit of the daily bread is the greatest teacher, there is no gainsaying the fact that a doctor, of all men, should have the highest possible professional training. The University of Cincinnati plan, then, represents a clear gain. It gives the student all the lectures he had before and in addition confers upon him a practical acquaintance with the problems which he will find confronting him in the future. The benefit to the community is beyond all accounting in terms of dollars and cents.

Underground Waters of Southern Minnesota.

The United States Geological Survey has just issued Water Supply Paper 256, Geology and Underground Waters of Southern Minnesota, by C. W. Hall, O. F. Meinzer, and M. L. Fuller. The region described in the report includes approximately the southern two-fifths of the State of Minnesota and has an area of 28,265 square miles. Aside from the Cities of Minneapolis and St. Paul this is essentially an agricultural region.

The purpose of investigation, which was conducted in co-operation with the Minnesota State Board of Health, was to determine to the fullest practicable extent the principal facts in regard to the underground waters, their quantity, head mineral quality, sanitary conditions and depths beneath the surface, as well as the best methods of drilling to them and finishing wells for their utilization and to consider all other questions relating to their recovery for human use.

A question in which nearly all communities are interested, says the report, is whether flowing wells can be obtained by drilling to considerable depths. Much blind optimism prevails in regard to this subject. Many towns have at one time or another borne the expense of drilling at places where there was no real prospect of obtaining flows and others are likely to suffer in the same way unless they are properly informed.

It is by no means necessary that every village or city should drill a deep well in order to learn whether flows can be obtained. Even where there are no prospects for flowing wells, the question of head is important. If the water rises higher from the deeper than from the shallower beds it is important that the community should know it. The information obtained as the result of the investigation gives ample data for determining definitely for most communities whether or not there is any prospect of obtaining flowing wells. These data are given in the report for each county separately so that the well driller may determine with some degree of accuracy to what depth he must go to obtain water. The investigation developed the fact that the domestic water supply for most of the village inhabitants of southern Minnesota is derived from shallow, open wells, which in settlements without sewer systems are necessarily near one or more privies or cesspools. An examination of eleven of these wells situated in as many different villages showed the presence of bacillus coli in ten of them—an indication of contamination by human or other animal excreta. This situation is an argument for higher ideals of cleanliness and sanitation in villages embraced in the investigation. Every community, it is stated, should aim to procure an adequate source of water supply, to install an efficient system of waterworks with mains reaching every home, and to construct an approved and extensive system of sewers. The report states that the people should be educated in the elementary principles of sanitation. When once they compre-

head that in drinking the clear, cold water from their shallow private wells they are imbibing the bacteria laden seepage from their privies or barnyards, and when furthermore they understand that better conditions are within ther reach, they will be ready to do their part in the work of improvement.

THE EMPIRE AND THE WORLD ABROAD

Housing Problem in England.

When John Burns, the workingman Cabinet Minister of England, fathered the town planning bill as his first official parliamentary infant, and engineered it successfully through the House of Commons in the face of stormy opposition, he was hailed as a hero by his colleagues, and naturally felt proud.

But while he was receiving the congratulations of all who were crying out for better housing accommodation, more beautiful towns and healthier surroundings on the one hand, he exposed himself to an avalanche of personal abuse prompted by slum landlordism, which felt bitterly the invasion of its vast territorial interests.

And now it has dawned upon the president of the Local Government Board that the enthusiasm of his friends was premature, for their plaudits are not yet justified by the results.

He is now face to face with a problem more acute, perhaps, than that which prompted the town planning idea itself. For the operation of the act, which came into force recently, meant the wholesale wiping out of huge areas covered with unsanitary working class dwellings, especially in rural districts, and the result is that thousands of poor families are being driven from their homes without any alternative accommodation except the workhouse or the barns of their neighbors.

In Kent and some other counties bordering on London there are already hundreds of families who are obliged to seek the hospitality of the hopfields.

No man is more disturbed over these unexpected results of his town planning scheme than John Burns himself. His elevation to the position of a Cabinet Minister did not add to his popularity among the rank and file of the working classes, and it is now feared among his friends that his town planning zeal may lead to his political undoing.

But meanwhile he passes the blame on to the local authorities, who should be able, he thinks, to rise at once to an emergency of this kind and provide the necessary habitations for the dispossessed families. He is reminded, however, that houses to accommodate thousands of persons can not grow like mushrooms, and that he should have foreseen the difficulty he was creating before he put his act into force.

It must be explained that the slum landlords of the country are conspiring to bring discredit upon the town planning scheme and that many local authorities are aiding them in their campaign of resistance to the working of the act.

The landlords declare it would not pay them to put the old houses into the sanitary condition required by the act, while they can not run the risk of having them inhabited in their present state, in view of the penalties which the act imposes. The result is that evictions, recalling some of the old scenes in Ireland, are now a matter of frequent occurrence in the rural districts of England. The situation has become so acute in the counties adjacent to London that the canvas tents used by coronation soldiers have been asked for to shelter some of the ousted victims.

No act of parliament placed on the statute book of England has ever provoked more determined opposition from the landlord class, and it looks as if the battle was only opening.

Australia and Tuberculosis.

The results obtained in the crusade against tuberculosis in Australia are likely to give an educational impetus to the other countries in the world, according to one of our correspondents who has recently visited the island continent. Less is known by the outside world about Australia than any other civilized country, and the writer was surprised to find health conditions there better than in any known

country on the globe. The death-rate is only 10.95 per thousand per annum.

"The death-rate from tuberculosis," he writes, "has been steadily declining during the past twenty-five years, and now is less than 9 per cent. of the total deaths, which is a lower percentage than any published by any other country which compiles its statistics in an equally reliable manner."

The writer goes on to say that the measures which the Australian health authorities believe to be responsible for this satisfactory state of affairs are of interest.

"These are all the more noteworthy," he says, "when it is remembered that in 1885 over 16 per cent. of the total deaths were due to tuberculosis in New South Wales.

"In 1881 a Board of Health was organized in New South Wales, to which considerable powers were given to combat disease. From the time the board brought the provisions of this law into force there has been a rapid decline in the tuberculosis death-rate.

"In 1886 a Dairies Supervision Act was passed. It required that all dairymen and milk vendors must be registered, the dairies kept in a sanitary condition, and that any person working in a dairy must be reported to the Board of Health immediately if he is suffering from an infectious disease.

"The enforcement of this Act was followed by a marked reduction in the infant mortality. The rate for the latter for the years 1883 to 1886 was 81.6 per cent. This steadily declined, and for the years 1905 to 1908 it reached 25.9 per cent.

"In 1892 the Diseased Animals Act was passed, which prohibited the sale of diseased animals and authorized the condemning and destruction of meat which was unsound.

In New South Wales the notification of cases of pulmonary and throat tuberculosis has been compulsory for over ten years. The walls and ceilings of houses in which cases occur are sprayed with a solution of formalin and the floors are washed with a solution of corrosive sublimate.

"The effectiveness of the educational campaign is well shown by the fact that open-air sleeping is more general than in any other country. There is scarcely a dwelling-house constructed nowadays in Australia, even a laborer's cottage, which is not provided with a suitable verandah for outdoor sleeping.

"There is very little expectorating on the sidewalks or other public places. Ordinances to prevent the contamination of milk and other foodstuffs are well observed. In shops where fresh meat is offered for sale it is customary to find sheets of water running over the front windows and walls for the purpose of catching dust.

"All large cities like Sydney (population 700,000), Melbourne (population 600,000), Adelaide, and others, have tuberculosis sanatoria, with a large number of beds for chronic cases.

"The Greenvale Sanatorium near Melbourne will compare favorably with similar institutions in Europe or America. The health officials believe that only a few years will elapse before every case of pulmonary and throat tuberculosis will be under such control as to reduce the danger of transmitting the infection to a minimum."

The following recommendations made at a conference of the principal medical officers of the Commonwealth last Spring, indicate the advanced state of the tuberculosis campaign in Australia:

"Legal power to regulate the home management of consumptives; legal power to remove dangerous or infective consumptives into segregation; legal power to detain such consumptives in segregation; legal power to examine medically contacts and housemates of consumptives; financial assistance to the wives and families of necessitous consumptives admitted to hospitals or sanatoria."

The conference stated that forcible segregation was necessary for "the small number of persons who persistently decline to take the precautions enjoined upon them for the safety of others," and "to the somewhat larger number of persons whose circumstances, either of poverty or of advanced illness combined with small means, render observance of the necessary precautions by them physically impossible. This form of control should

be applicable not merely to persons in dwellings, institutions, and the like places, but also to those frequenting workshops and places of public resort."

Rich Out-Patients in Paris.

Members of the medical profession in Paris are up in arms against the hospital authorities for an alleged public abuse, which consists in allowing rich patients to be attened, to the detriment of the poor and the serious loss of practitioners. The *Syndicat des Médecins* has presented a formal protest to the authorities. The principal grievance is that patients who can very well afford to be attended in their houses now prefer to go to the hospital as paying patients, and for a ridiculously small fee they obtain surgical or medical aid to which only the poor are entitled. The physicians state that in former times the rich considered it humiliating to be attended in the hospitals. The members of their families would have had conscientious scruples about confiding them to strange nurses. Heavy sacrifices were made to keep the sick or invalids at their own homes, and have them attended by their own physician. Nowadays they allege it is quite common to hear of persons in easy circumstances, who live in magnificent flats and occupy prominent positions, going to the hospitals when the slightest thing is the matter with them. They go there, a fortiori, when it is a question of having an operation. For five or ten francs a day they get all the attendance they require, and the services of the best physicians or surgeons. With a few tips here and there to the nurses, infirmarians, and general servants, they are made as comfortable as could be at an outlay which is ridiculous compared with their means. They thus obtain for a few hundred francs, or even less, a treatment for which they could readily afford to pay.

Doctors in the Paris hospitals report typical cases. One of them says that for some time past they noticed that hospitals had become a sort of rendezvous of the "monde élégant" and the "haute bourgeoisie." Number So-and-So, for instance —all patients have a number—is the proprietor of a large and prosperous hotel in the north. Some of his traveller guests had told him of the excellent attention they had received at the hospital. He took the opportunity to come to town and have himself treated at the same institution. In the morning he was at the consultation with the poor, and in the evening regularly went to the theatres with his wife. Number So-and-So is a shopkeeper, who has an extensive trade. He had himself treated for a fracture of the nasal bone. He could not come to the consultation the following day because he had arranged to go with his family to the seaside. The same doctor gives other instances of persons who, after they had come to the consultations at the hospital, and by paying discreet tips had their turn ahead of the numerous poor, went to the summer resorts for a cure. One man, so as to deceive the staff, had come in a workman's blouse. But under it the physician detected fine clothing, and on inquiry it was learned that the man was a rich manufacturer employing hundreds of hands. A retired dealer who had made a fortune assumed the name of one of his delivery men, and also came to the hospital in workman's clothes. A lady living in the provinces on a large income came to Paris and stayed with her cousin, but to obtain free treatment at the hospital for her daughter she dressed her up in the maid's clothes. No wonder some members of the medical profession are becoming indignant.

The Public Health movement is one of the finest examples of social growth known to us. It is the name for a vast organization that as grown out of definite social needs. It has a perfectly definite objective; it has methods that can be analysed down to detail; it is steadily showing itself in new differentiations and integrations; there is no section of society unaffected by the movement; there is no section that can disregard it; there is no meanness of finance that can escape it; there is no inertia that it will not ultimately overcome. Over and over again we see the bitter lesson driven home on the reactionery mind; over and over again the densest imagination must waken up to a local need, that disease disablement and death have revealed; over and over again, the unhealthy locality, the unhealthy house, the death dealing industry, and other innumerable varieties of insanitation have vanished under the tide of hylenic ideal.—*W. L. Mackenzie, M.A., M.D., D.P.H., in "Health and Disease."*

M. LE DR. E. PERSILLIER LACHAPELLE,

PRÉSIDENT, CONSEIL D' HYGIÈNE DE LA PROVINCE DE QUÉBEC.

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Public Health Journal

State Medicine and Sanitary Review

VOL. II TORONTO, CANADA, NOVEMBER, 1911 No. 11

Editorial

THE CANADIAN PUBLIC HEALTH ASSOCIATION CONGRESS

From December 13th to 15th next, will gather at Montreal in annual session for the first time, the members of this Association, formed a year ago.

It is just twenty-five years since the first Public Health Congress was held in Canada, when the American Public Health Association, which had the year before enlarged its constitution to include Canadian members, held its annual sessions in Toronto in 1886. This was at that time a notable event, creating widespread interest, and proved of great Provincial value, since during the meeting, was organized the Association of Executive Health Officers of Ontario, the reports of whose twenty annual meetings, published by the Provincial Board of Health, form the only compend of practical municipal public health work to be found in Canada to-day.

Yet this Association was limited to Ontario; and Public Health workers in Canada have felt that with the growing sense of nationhood a department of public administration in its essence so peculiarly inter-provincial and national — and, indeed, continental — in its relationships ought to find expression in an organization of national character.

It was this spirit and sense of need for mutual assistance and co-operation, which resulted in the formation in 1900 of the Canadian Association for the Prevention of Tuberculosis, whose Annual Report of 300 pages has just been published, and in which the prefatory note states: "Last year's Report showed a well-marked advance all along the line in the campaign against tuberculosis. The progress thus recorded has continued and is yet more striking."

The growth of the national spirit was still more accentuated when in Ottawa, in October, 1910, at the call of the Commission of Conservation of Canada, a Conference of Federal and Provincial Public Health Officers was held and formally organized for future work.

During this conference, through the exertions of the editors of *The Public Health Journal*, published in Toronto, primarily as the outcome of private funds, given through a patriotic sense of duty, those attending the Conference and others were brought together and after discussion resolved themselves into the Canadian Public Health Association, and adopted the *Journal* as their organ, subject to their official supervision.

A year has passed, and the ideas thus crystallised have broadened into a Public Health Congress, which is to be held in Montreal, and which becomes for Canada the first concrete illustration of the unity of purpose of all interested in the many phases of our national health.

This meeting will be a notable one, more so even than that which instituted the Tuberculosis Association in 1900 under the patronage of Lord Minto, since this first Congress of the Canadian Public Health Association will be held under the distinguished patronage of Field Marshal His Royal Highness the Duke of Connaught, Governor-General.

What the Association proposes is very well outlined in the programme published in this number of the *Journal;* but what it may become to Canada cannot as yet be fully foretold.

The Provinces of Canada were long looked upon as *disjecta membra*, each with its separate interests, working out its own problems in health, as in other matters, largely alone. Everywhere health officers were too often looked upon as necessary evils, like the nuisances they were supposed to abate, rather than as most important elements in the construction of the social fabric of a modern State. The engineer might build highways and construct waterworks, which the business men would finance; but it is to the medical officer to whom it is given to make those researches into the secrets of Nature and of Life, to the biologist, in fact, that we look for that guidance which will lead the people in every sphere to higher planes both of thought and action whether in regard to personal hygiene, the education of the child, work in the field, shop or mine, or in those higher relations which make up our complex social life.

That the field of Public Health is, however, wider than biology is evident when the list of those who have become patrons, honorary officers, officers and members is examined. There will be seen His Royal Highness the Governor-General, the official embodiment of all the administrative wisdom and good will which the King and Imperial Government can send to the people of Canada. There we have Lord Strathcona, the Canadian Nestor, whose ninety years form a book of wisdom, illustrating obedience to every commandment in the decalogue of Hygiene; while the Premier of Canada and the Premiers of all the Provinces, together with their Ministers especially in charge of Public Health services, and the chairman of the Conservation Commission and his chairman of the health committee, are all to found amongst the Honorary Vice-presidents.

In its active membership we find all the professors of Hygiene in the colleges, the officials of the Public Health services of the Dominion and of the Provinces, the Officers of Health of hundreds of municipalities with associated architects, engineers and social workers generally, co-operating with our medical men in every part of Canada.

The people of this country will await with expectant interest the pronouncements of such an association on the many public health problems, the solution of which is of advantage to all.

CANADIAN PUBLIC HEALTH ASSOCIATION.

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PROGRAMME.

Of the First Annual Convention, to be held in Montreal, at McGill University, 13th-15th December, 1911.

Wednesday, 13th December.

10 A.M.—
General business meeting, including the adoption of the Constitution.
Registration of Members.
Meeting of Committees.

2.30 P.M.—1st GENERAL SESSION—PAPERS.

1. "Military Aspects of Sanitation," Colonel G. Carleton Jones, Director General, Medical Services, Ottawa.
2. "Duties of Authorities and Private Citizens Towards Consumption," C. J. Fagan, Esq., M.D., Provincial Officer of Health, Victoria.
3. "Medical Inspection and Care of Immigrants on Shipboard," J. D. Page, Esq., M.D., Quebec.
4. "Conservation of Food by Cold," P. H. Bryce, Esq., M.A., M.D., Chief Medical Officer, Department of Interior, Ottawa.

5. "Cheese Factory and Farm Well Waters," W. T. Connell, Esq., M.D., Professor of Bacteriology, Queen's University, Kingston.
6. "Tuberculosis a Public Question," Geo. D. Porter, Esq., M.B., Canadian Anti-Tuberculosis Association, Toronto.
7. "Factors in the Spread of Acute Intestinal Epidemics," H. W. Hill, Esq., M.D., D.P.H., Director Epidemiological Division, State Board of Health of Minnesota, Minneapolis
8. "The Municipalization of Milk Supplies," W. A. Evans, Esq., A.M., M.D., D.P.H., Chicago.
9. "Hygiene of Canadian Waterways," William Oldright, Esq., M.A., M.D., Toronto.
10. A paper by Dr. Rutherford, Department of Agriculture, Ottawa.

8.30 P.M.—

Official opening of the Convention at the Royal Victoria College, Sherbrooke Street, Montreal, by the Patron, Field Marshal, His Royal Highness, the Governor-General.

Address by the Hon. R. L. Borden, P.C., Premier of Canada.

Address of Welcome, by His Worship the Mayor of Montreal.

Address of Welcome by the Hon. Sir Lomer Gouin.

President's Address.

Conversazione.

Thursday, 14th December.

10 A.M.—MEETINGS OF SECTIONS—

Section 1—Medical Officers of Health; Convener, Louis Laberge, Esq., M.D., City Medical Officer of Health, Montreal.

Papers will be read in this section by J. W. S. McCullough, Esq., M.D., Chief Health Officer of Ontario; M. M. Seymour, Esq., M.D., Health Commissioner of Saskatchewan; and several others, names and titles of papers to be announced later.

Section 2—Laboratory Workers; Convener, J. A. Amyot, Esq., M.D., Professor of Hygiene, Toronto University.

Papers will be read in this section by W. T. Connell, Esq., M.D., Professor of Bacteriology, Queen's University, Kingston; C. H. Higgins, Esq., D.V.S., Biological Laboratory, Ottawa; Major H. M. Jacques, Esq., M.D., D.P.H., McGill Hygiene Laboratories; and several others, names, and titles of papers to be announced later.

Section 3.—Sanitary Engineers and Architects: Convener, T. Aird Murray, Esq., C.E., Toronto.

Papers—

1. "Garbage Removal and Destruction," R. H. Knight, Esq., M.D., City Water Department, Toronto.
3. "Chlorination of North Toronto Water Supply, E. A. James, Esq., C.E., Town Engineer, North Toronto.
3. "Gravity Mechanical Filtration at Saskatoon," Geo. Clarke, Esq., C.E., Toronto.
4. "Water Supply by Air Tank Pressure for Small Towns," F. McArthur, Esq., C.E., Town Engineer, Yorkton, Sask.
5. "Mistakes to be Guarded Against in Water and Sewerage Systems for Towns." A. E. Blanchard, Esq., C.E., City Engineer, Lethbridge, Alberta.
6. "Lantern Views of Lethbridge Sewage Disposal System."
7. "Natural Ventilation as Applied to Private Houses, etc.," T. W. Ludlow, Esq., B.Sc., M.A., Professor Architecture, McGill University.

Other papers will also be read at this section, the titles of which will be announced later.

Section 4.—Social Workers: Convener, Mrs. Grace Ritchie England, M.D

1. "Infant Mortality and Pure Milk," C. Blackader, Esq., M.D., Professor of Pediatrics, McGill University.
2. "Child Welfare," G. J. Adami, Esq., M.D., Professor of Pathology, McGill University.
3. "Defective Children," Miss Helen MacMurchy, M.D., Toronto.
4. "Citizenship in Connection with Public Health," T. A. Sherrard, Esq., Westmount, Que.
5. "Medical Inspection of School Children," Mrs. Smillie, Westmount.
6. "Infant Mortality," Miss Ellen Babbitt, Russel Sage Foundation, Washington, D.C

2.30 P.M.—2ND GENERAL SESSION.

Symposium on Town Planning and Housing. Papers:

1. "Town Planning and Housing," Chas. A. Hodgetts, Esq., M.D., Medical Adviser Commission on Conservation, Ottawa.
2. "Town Planning and Civic Authorities," J. E. Laberge, Esq., M.D., Superintendent, Infectious Diseases Department, City Hall, Montreal.
3. "Insanitary Housing Conditions," Chas. J. C. O. Hastings, Esq., M.D., City Medical Officer of Health, Toronto.
4. "Insanitary Areas," James Roberts, Esq., M.D., City Health Officer, Hamilton.
5. "Municipal Powers in Dealing With Town Planning Schemes," Rickson A. Outhet, Esq., Architect, Montreal.
6. "Rehousing in Canada," W. D. Lighthall, Esq., K.C., Westmount.
7. "Statistics on Housing." Percy E. Nobbs, Esq., Architect, Montreal.
8. "Town Planning," Colborne P. Meredith, Esq., Architect, Ottawa.

8 P.M.—Annual dinner of the Association for members, delegates, and the ladies accompanying them.

Friday 15th.

10 A.M.—3RD GENERAL SESSION.

Symposium on biological sewage disposal. Papers:

1. "Physical and Economic Aspects of Biological Sewage Disposal Plants," P. H. Bryce, Esq., M.A., M.D., Chief Medical Officer, Department of Interior, Ottawa.
2. "Progress in Canada in Biological Methods of Sewage Disposal During the Last Twenty Years," Willis Chipman, Esq., C.E., Toronto.
3. "Engineering Problems Involved in Biological Methods of Sewage Disposal," T. Aird Murray, Esq., C.E., Toronto.
4. "Chemical Problems Involved in Methods of Sewage Disposal," G. G. Nasmith, Esq., Ph.D., Toronto; J. O. Meadows, Esq., C.E., Montreal.
5. "Bacterial Problems Involved in Biological Methods of Sewage Disposal," J. A. Amyot, Esq., M.D., Toronto; T. A. Starkey, Esq., M.D., D.P.H., Montreal; H. W. Hill, Esq., M.D., D.P.H., Minneapolis.

12 Noon—

Business meeting and election of officers for the ensuing year.

2.30 P.M.—

Meeting of new Executive Council.

Members proposing to attend, and sanitary authorities and other organizations sending delegates, are requested to kindly intimate their intention at as early a date as possible to the secretary of the Committee on Local Arrangements, F. C. Douglas, Esq., M.D., D.P.H., 51 Park Ave., Montreal.

In order that members and delegates may get the advantage of reduced railway rates on their return trip, they are requested to obtain standard certificates from their local passenger agents on purchasing their tickets to the Convention.

TORONTO WATER SUPPLY: PREVENTION OF WASTE

BY WILLIAM OLDRIGHT, M.A., M.D.
EMERITUS PROFESSOR OF HYGIENE, UNIVERSITY OF TORONTO

The question of Toronto water supply and prevention of waste is, to her citizens at least, of practical interest at the present time.

Before our filtration plant has got into working shape a proposal is made, and that in high quarters, for an extension of it to even double the area already determined upon. Those who make this proposal have lost sight of the fact that figures show that Toronto wastes an unreasonable quantity of water. From figures collected in the principal cities of Europe and America, for many years we used to consider 75 gallons of water per head per diem a very liberal allowance for all purposes of a city.

From a sanitary engineer well versed in municipal work in England, but now residing in Toronto, I have lately received information that with regard to the highest sanitary needs, a smaller supply than this has in later years been found sufficient, as greater care in safeguarding from waste has been employed, and this, as I have just intimated, without harmful stinting of necessary or helpful use.

I have to thank this gentleman for some particulars of city water supplies, copied from the *Cyclopædia of Civil Engineering* of the American Technical Society. The amounts for the English cities given are all 43 gallons or under; these are London, Manchester, Liverpool, Birmingham, Bradford, Leeds and Sheffield. In Continental Europe, the variations are great — from 11 in Venice, with its exceptional roadways, to 264 in Rome, with its exceptional gushing fountains and exceptional gravity supply. What we wish to know, however, is not how much water other cities can afford to pour out, but with what amount they can provide for ample sanitary requirements; and in no other city except Marseilles is the amount given over 60. In more than half it is less than 50. On the continent the variations are not so extreme in either direction, though still great. Some cities of good report are quoted as approaching the mean: Providence, 57; San Francisco, 63; Worcester, Mass., 66; Rochester, 71; Montreal, 83; Brooklyn, 89; Toronto being quoted at 100. I have visited several of the cities in the list given and their water works, amongst them Berlin and Paris, and have found their sanitary condition apparently not suffering from the fact that they do not pump as much water as we do.

The amount which is now being pumped, and the amount which it is estimated can be efficiently filtered by our filtering plant is about the same, between 40,000,000 and 50,000,000 gallons per diem. It has been said in the high official quarter to which I have referred that we should look to the future; but the figures just given show that we shall have in the near future provision for more than double our present population if our waterworks engineer be given power to stop the waste that is now going on; and that even with the large allowance of 75 gallons which used to be talked of, we shall have provision for a population of 600,000.

Since commencing this paper I have been given to understand by Mr. Fellowes, waterworks engineer of Toronto, that he made an inspection and test of a district of the city lying between Yonge and Bathurst Streets, south of Wellington to water front.

In the district lying between Queen Street and Gerard Street, and Yonge and Dalhousie Streets, having an area of 1,100 feet by 2,500 feet, the minimum night flow was found to be 400,000 gallons. In another district, that lying between Bloor and College Streets, and St. George and Robert Streets, the minimum flow at night was also 400,000 gallons per 24 hours, while the district between Bloor and College streets, and Bathurst to Robert, shows a minimum flow of 510,000 gallons — 95 per cent. of all these districts being waste in losses from leaky fixtures and wilful waste through allowing taps to run. On one street 12 services were found running to waste 80,000 gallons per 24 hours—29,200,000 gallons per year. This, at 10c. per 1,000 gallons, is chargeable at $2,920, while the revenue derived from these losses amounts to $80 or $90.

One of the first steps towards correcting this evil should be a more extensive investigation, and this might lead to an extension of the metering system. A suggestion worth considering is that the waterworks inspectors should carry with them a supply of washers or such simple contrivances as would not interfere with the trade of the plumbers, and householders would then welcome, rather than resent, the visit of the inspectors.

Into the various sources of waste within and without the household it is not necessary to enter; nor into the various other details which the engineer has in mind for controlling it.

An advantage of reduction of water supplied is not confined to the first cost and facilities of supplying the amount—the wear and tear of machinery, cost of fuel, and capacity and efficiency of filters; but it also has a bearing on the treatment of the sewage effluent. Whatever plan or places may be adopted for this, whether filtration of it on large tracts of sandy land, as was proposed at a joint meeting of the city and provincial health authorities some years ago, or whether entirely by septic tank, by contact beds, or by chemical treatment, whatever may be done, it will be much easier and more economical to handle a small amount of sewage than a large one, and much of the waste water finds its way into the sewers.

The intimate relations between sewage-disposal and water-supply are well known to readers of *The Public Health Journal*, and it must remain one of the regrets of Toronto sanitarians that our city should have been so long before beginning at the right end — disposing of the sewage so as to keep the water pure. It is, however, some satisfaction to those who for the last twenty-five years, since the early days of the Provincial Board of Health and during the professional lifetime of our city engineering staff, have been pressing this subject,—it is some gratification to find the trunk sewer almost an accomplished fact, and that we may hope, if we do not die too soon, to see a proper disposal of its effluent. May we hope, too, that Toronto citizens will some day drink pure water without an admixture of drugs. Those who have made extensive observations of the effects of different varieties of water on the physical condition of consumers seem to consider that the question of the chemical and mineral ingredients of water is not a matter of indifference.

In looking back over the sanitary history of Toronto one is struck with the disproportion of outside advisers — "experts"— and the results accomplished, and with the effects of the lack of continuity. If at certain times we had relied more upon our own officials, leaving it to them to seek consultation and advice on points in regard to which they needed it, and allowing them to get to work, it would have been much better. The magnates of municipal government come and go, but the engineer's department and the health department have a continuous study and history of the sanitary problems of the city, and a sense of responsibility and a laudable measure of pride. Let us recognize this more.

LE MEDECIN ET L'HYGIENE

PER LE DR. E. PERSILLIER LACHAPELLE
PRESIDENT, CONSEIL D'HYGIENE DE LA PROVINCE DE QUÉBEC

L'hygiène est devenue une science positive, donnant des résultats certains, toujours les mêmes. Cela est dû en grande partie, aux progrès énormes accomplis par la médecine pasteurienne. Et c'est pour cela que'lle est d'un si grand secours au médecin qui s'efforce de prolonger la vie de ses clients, soit en rétablissant la santé, lorsqu'elle est compromise, soit, ce qui est mieux encore, en empêchant la maladie de compromettre la santé.

Considérons l'hygiène un instant, et voyons quel vas to champ elle couvre. Par l'alimentation, la gymnastique et le travail, elle nous permet de développer la force et de fortifier la santé. C'est elle qui, par des régimes alimentaires spéciaux, par des régles bien comprises des soins à donner aux malades, nous fournit les moyens de soutenir ceux-ci à travers les maladies les plus longues et les plus débilitantes. Bien plus, en formulant les règles de la prophylaxie, elle a, suivant l'heureuse expression du Professeur Brouardel, rendu les maladies contagieuses *évitables*, et fourni ainsi, l'un des moyens les plus sûrs de protéger la santé. On peut rendre à l'hygiène ce témoignage, qu'elle a diminué, dans le monde entier, la mortalité générale, et jamais l'on ne pourra rendre à notre profession, un témoignage plus flatteur.

Le médecin, s'il veut remplir sa mission d'une manière efficace, doit être hygiéniste. Non-seulement il doit fixer l'hygiène générale des familles, afin de développer au foyer même la santé et la force; non-seulement il lui faut établir l'hygiène particulière à chaque maladie, s'il ne veut pas que le malade succombe; mais il doit encore, dans les cas de maladies contagieuses, protéger la santé du public. Son rôle ici n'est pas le moins important; car, suivant l'axiome bien connu, "mieux vaut prévenir que guérir."

De toutes les mesures hygiéniques, c'est en effet la prophylaxie qui doit tenir la première place. Cette vérité est démontrée depuis longtemps par les faits. Elle est admise aujourd'hui sans conteste, et les autorités civiles en ont fait la base des organisations sanitaires dans les pays civilisés. L'hygiène internationale à ses lois écrites, et l'établissement des quarantaines aux frontières n'a été que le résultat de la prophylaxie armée, mesure pacifique s'il en fut, puisqu'elle ne vise qu'à sauvegarder la vie des habitants du territoire, mais mesure ayant force de loi tout de même, et à laquelle tout voyageur doit se soumettre.

Les grands centres de population agissent de même, désirant, eux aussi, protéger la santé publique sur leur propre terrain. L'hygiène municipale a ses réglements, qu'elle impose partout où l'autorité civique a le droit d'intervenir. C'est ainsi qu'elle veille à la bonne qualité de l'approvisionnement d'eau, à la propreté des rues, à l'assainissement du sol, à la salubrité des logements, des écoles, des établissements industriels etc. Il est bien qu'il en soit ainsi, puisqu'il s'agit, source toute, de combattre l'éclosion des maladies, de conserver la vie des contribuables

Mais si l'hygiène internationale, qui relève des gouvernements et l'hygiène municipale, qui ressort de l'administration civique, ont créé pour les médecins des positions dignes d'attirer l'ambition de ceux qui veulent faire, de l'hygiène, une étude particulière et complète, ce n'est pas sur ce terrain spécial que l'hygiène devient une nécessité première au médecin praticien. Sans doute, il agirait contrairement à l'esprit de sa profession s'il ne savait seconder l'action des autorités sanitaires, mais ce n'est pas à la frontière, ni à l'hotel de ville que, dans le cours habituel des choses, on attend de lui une intervention active et efficace; c'est dans la famille, c'est dans son entourage qu'il doit agir. C'est là, que l'hygiène, qu'elle soit générale, spéciale ou prophylactique, lui fournira les plus sûrs moyens de maintenir la santé et de prolnger la vie.

1. L'HYGIENE GENERAL.

Si la santé des masses dépend de l'hygiène internationale ou de l'hygiène municipale, la santé de la famille repose entierement sur l'hygiène domestique, et c'est

ici que nous entrons dans le domaine propre au médecin praticien.

L'hygiène domestique a aussi ses lois, et ce serait courir un grand péril que de vouloir s'en écarter. Tout le monde doit donc s'y soumettre, depuis le bébé jusqu'au vieillard, s'il veut maintenir sa santé dans un bon état, s'il veutdévelopper et conserver intactes ses fonctions physiologiques. La vie, disait Bichat "c'est l'ensemble des phénomènes qui s'opposent aux causes de mort." Développer et maintenir la santé, c'est-à-dire la vie, c'est donc accroître la résistance, et c'est en somme, la meilleure manière de faire de la prophylaxie.

Aussi que n' a-t-on pas obtenu avec l'hygiène de la première enfance Il a suffi de donner à l'enfant une nourriture appropriée, exempte de toute influence nocive, pour voir disparaître ces troubles digestifs dangereux qui venaient si fréquemment mettre en péril les fonctions physiologiques de ce jeune organisme. La simple aseptie du lait a fait plus, pour sauver la vie des enfants, que tous les traitements les plus en vogue de la gastro-entérite, et cela, par le fait seul qu'elle prenait le contrôle absolu de l'alimentation de l'enfant et qu'elle la mettait à l'abri de tous les germes de mort qui pouvaient l'envahir.

Ce que l'hygiène a fait pour les enfants elle le fait aussi pour les adultes. L'enfant ayant grandi, le contrôle des *ingesta* ne sera pas aussi facile à établir. Mais il n'est pas à dire, pour cela, que l'hygiène doive disparaître de la maison. C'est, au contraire, pendant l'âge mûr que l'hygiène devient de plus en plus nécessaire. Prenons, une maison mal chauffée, mal ventilée, mal éclairée, et surtout mal drainée; les plus vigoureux n'y résisteront pas, et si l'hygiène n'intervient pas à temps, nous les verrons bientot s'anémier et se cachectiser, en dépit de tous les toniques ferrugineux ou autres, que nous pourrions prescrire. L'alimentation doit, à tout âge, être, réglée par des mesures sûres et bien comprises, si l'on ne veut pas voir éclater, tantôt des accidents aigus, dûs à des intoxications alimentaires, tantôt des troubles profonds de la nutrition causés par des erreurs prolongées de diète, et qui feront à la longue de nos clients des goutteux, des obèses et des brightiques. Et alors que nous aurons epuisé sur nos patients les ressources limitées d'une thérapeutique souvent impuissante, ceux-ci, s'ils sont jamais mieux renseignés, regretteront amèrement les conseils que nous ne leur aurons pas donnés, et qui les auraient engagés, comme on dit, à mettre un peu d'eau dans le vin. Et que dire du vieillard dont les artères sont envahies par la rouille de l'arterio-sclérose, et que guette au moindre écart l'apoplexie cérébrale? Une diète appropriée, assurant la régularité des intestins, empêchent la formation des ptomaines, ne vaudra-t-elle pas cent fois mieux pour lui que les meilleurs soins prodigués, lorsqu'une hémorrhagie sera venu déchirer son cerveau?

On a besoin de l'hygiène à tout âge, et c'est par elle que l'on assure, dans le milieu familial, mieux que par le luxe et la

2. Hygiene Speciale.

Ce n'est pas que je veuille dire que le rôle du médecin près du malade soit à mépriser, loin de là. Ce ne serait pas tenir comte des immenses services rendus en tout temps par nos grands thérapeutes. Mais ce que j'affirmerai hautement, sans crainte de me tromper, c'est que la thérapeutique ne saurait s'appuyer uniquement sur la matière médicale; c'est que, même dans son rôle de guérisseur, le médecin ne saurait se passer de l'hygiène. Unmalade traité uniquement avec des drogues ne serait qu'à moitié traité; ce serait supprimer, d'un seul coup, les bons effets si nécessaires du *nursing*.

Quel midein n'a pas été surpris de constater combien peu de maladies ont leur remède spécifique, combien la plupart du temps, le traitement doit rester symptomatique.

Nous devons être reconnaissant à la bactériologie de nous avoir si vien renseigné sur les modes de défense de l'organisme, et de nous avoir démontré que, dans la grande majorité des cas, c'est à stimuler les défenses naturelles du corps que le médecin doit s'appliquer dans son traitement. Or, ici encore, l'hygiène vous rendra des services inappréciables, et vous fournira non-seulement le moyen de stimuler les centres nerveux, ces grands régulateurs de la physiologie humaine, mais encore d'oxygéner le sang et d'activer l'action des émonctoires. Toute la défense physiologique est là. La ventilation de la chambre du malade, la cure d'air, l'hydrothérapie, la diète, le massage, l'exercice, le repos, sont des traitements hygièn-

iques, qui n'ont pas leur équivalent dans la pharmaceutique la plus élaborée

Combien de maladies chroniques et des plus graves, ne sauraient relever de la matière médicale. Par quels médicaments par exemple, corrigerez-vous la diathèse arthritique? Avec quelles drogues ferez-vous disparaître les lésions d'un foie cirrhotique, d'une moelle sclérosée, d'un rein brightique? Quel spécifique prescrirez-vous contre la dyspepsie? Cependant la lésion existe, la vie du malade est en danger. N'est-ce pas ici encore l'hygiène qui vous aidera le mieux, et qui, par le régime alimentaire, vous fera ajourner pour une longue période l'échéance fatale d'un mal inguérissable. Une lésion mitrale ne se répare pas, mais l'hygiène du cardiaque aura cela de bon qu'elle maintiendra la compensation, et reculera indéfiniment les indications de la digitale.

Qu'il s'agisse de maladies inflammatoires ou de maladies de la nutrition, je le répète, l'hygiène s'impose. Sans elle, le traitement resterait forcément incomplet, et souvent même, elle seule, peut conjurer les mauvais effets d'un organe dont le fonctionnement fait défaut. C'est par une bonne hygiène, plus encore que par des médicaments, qu'on arrive à prolonger la vie des malades.

3. Hygiène Prophylactique.

Mais si l'hygiène, joue, un rôle secondaire, quoique nécessaire, dans le traitement des maladies inflammatoires et des maladies de la nutrition, ses prescriptions prennent la première place dès qu'il s'agit de maladies contagieuses, ou transmissibles.

C'est qu'ici le danger devient général. Il existe non-seulement pour le malade lui-même, mais encore pour la famille et pour la société. Pour le malade, le danger vient de la nature infectieuse de la maladie, qui l'expose à des complications graves, à des lésions secondaires, à la toxhémie, ce qui exige de la part de ceux qui en ont la garde des soins constants et minutieux, un *nursing* de premier ordre. Pour la famille, le danger réside dans la possibilité de la contagion, ou de l'infection, qui peut atteindre tous les enfants au lieu d'un seul, immobiliser les adultes et les travailleurs, mettre en danger la vie des vieillards et, faire de la maison, en même temps d'une salle l'hopital, un foyer de contagion. Et alors un danger sérieux menace la société, puisque cette maladie contagieuse et infectieuse peut franchir le seuil de la maison contaminée, envahir les maisons voisines, pénétrer jusqu'à l'école, l'atelier, le grand magasin, gagner bientôt tout un quartier ou toute la ville, et créer, non plus un foyer de contagion, mais un centre d'épidémie. Si certaines maladies contagieuses, comme la coqueluche, par exemple, ou la rougeole, ou les oreillons sont d'une nature plutôt bénigne, qui peut jamais prévoir où s'arrêteront les ravages d'une épidémie de scarlatine, de diphtérie, de variole ou de méningite cérébro-spinale. Il arrive même souvent qu'une maladie contagieuse, sous des apparences bénignes, telle la grippe, soit une occasion aux complications les plus graves et donne un coup de fouet à toutes les tares constitutionnelles. Enfin, nous ne connaissons que trop les terribles ravages exercés par la tuberculose, ce fléau du genre humain, qui rampe sourdement dans toutes les classes de la société, et contribue pour plus d'un sixième à la mortalité générale de l'univers.

En face d'une maladie contagieuse, le médecin instruit et consciencieux éprouve un vif sentiment du danger qui existe, de la responsabilité qui lui incombe. Il sait fort bien qu'il ne s'agit plus d'une simple prescription chez le pharmacien mais qu'il y autre chose à faire; qu'il ne doit pas chercher uniquement à sauver la vie du malade, mais qu'il lui faut encore protéger la santé de ceux qui l'entourent, qu'il s'agisse de ses parents, de ses amis ou de ses concitoyens. C'est pourquoi, dans un cas de maladie contagieuse, le médecin qui a conscience de sa responsabilité établit d'abord, et en premier lieu, la prophylaxie.

Nous connaissons les moyens de défense que nous fournit l'hygiène prophylactique. On peut les ranger sous quatre titres principaux: 1° l'isolement; 2° l'antisepsie et la désinfection; 3° la vaccination; 4° la déclaration aux autorités sanitires. Je n'insiste pas davantage sur ces points, mais ce sur quoi je veux insister, c'est que la preuve de l'efficacité de ces mesures prophylactiques n'est plus à faire. Il suffit de jeter un coup d'œil sur les résultats obtenus, soit dans les grands centres, soit dans les établissements spéciaux, soit dans la pratique journalière pour s'en convaincre. N'est-ce pas dans les hôpi-

taux que l'isolement, la ventilation, l'antisepsie et la désinfection ont fait disparaître la septicémie, la gangrène, l'érysipèle, ont réduit à leur minimum les complications purulentes des plaies ou des opérations et ont donné, à la chirurgie moderne, toutes ses audaces et tous ses résultats heureux? N'a-t-il pas suffi dans les maternités d'un peu de propreté hygiénique pour sauver ce fléau des femmes accouchées, la fièvre puerpérale, et cela d'une manière si complète, si évidente que, s'il vous arrive maintenant dans votre pratique d'en avoir un cas, on vous en tiendra responsable? N'est-ce pas avec la simple stérilisation ou même l'asepsie du lait qu'on a transformé les crèches d'enfants, dont la mortalité, de 90 pour cent qu'elle était, est tombée à 20 ou 30 pour cent? N'est-ce pas avec la simple filtration de l'eau qu'on a réduit dans les villes, la fièvre typhoïde à son minimum? Que dire de l'efficacité de la vaccination, ce bienfait de Jenner à l'humanité, qui a fait disparaître la variole de l'Allemagne, et a permis dans les autres pays, de reléguer dans la légende, les grandes épidémies; n'est-ce pas grâce aux mesures d'hygiène si le choléra et la peste bubonique n'ont jamais pu envahir, depuis la création des quarantaines modernes les continents européen et américain, mais sont restés limités à certains quartiers des ports de mer? Voyez ce qu'on a fait en Angleterre pour la tuberculose, c'est en désinfectant les logis infectés et en vulgarisant les notions de l'hygiène moderne sur la prophylaxie de cette maladie qu'on est parvenu dans ce pays à diminuer de 45 pour cent la mortalité de cette maladie.

Non, l'efficacité de l'hygiène est aujourd'hui reconnue; elle a fait ses preuves. Le fait est si bien admis, l'utilité de l'hygiène s'impose à un tel point dans les populations, que partout on met en force les réglements sanitaires, que les gouvernements réalisant la haute importance de l'hygiène, et la nécessité de la mettre en pratique, ont fait de la salubrité publique un département de l'Etat, et qu'une organisation spéciale (bureau d'hygiène, conseils d'hygiène, quarantaine, hôpitaux d'isolement, etc) existe dans tous les pays civilisés.

MODERN FEATURES IN CONNECTION WITH SEWAGE DISPOSAL

BY T. AIRD MURRAY, C.E.

In some quarters an impression prevails that many of the generally acknowledged or accepted standard principles appertaining to sewage disposal are becoming out of date. This impression is not without foundation, but just how far it is true is a subject of practical interest to sanitarians.

Last year the Provincial Board of Health of Alberta issued a circular to municipalities stating in brief that the whole question of sewage disposal was passing through a transition stage; therefore, they generally advised caution. Such a statement is calculated to make those responsible for municipal expenditure pause and wonder just where they are at.

The necessity of efficient sewage disposal is generally acknowledged. It has been acknowledged for years in Great Britain, European countries and in the United States of America. Millions of dollars have been expended in schemes, in experimental work and in collecting data. Books and treatises innumerable have been produced dealing with the subject both from the practical and scientific standpoints. A British Royal Commission recently closed a session extending over several years,

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held 144 meetings, examined 197 expert witnesses, and sent out circular letters all over the world asking for and receiving all kinds of data. This commission published their report, which in 1908 was considered the most complete and authoritative treatise on the subject of sewage disposal. The German Government have been examining into the question and have employed not only expert engineers, but expert chemists and biologists; they have issued from time to time reports and treatises which have been translated and have become common knowledge to the sanitarian. Many of the American States, such as Massachusetts, Ohio, etc., have formed central experimental stations governed by experts, and have issued annual reports for years, handing out the most valuable and exact data and conclusions to the world generally. Many civil engineers and chemists have given their whole time and energy to this question of sewage disposal.

Now it is generally acknowledged that all these authorities are in agreement on certain general principals.

The generally accepted principals may be defined as follows:

(*a*) Sewage contains quantities of mineral and organic matter. The organic matter is found both in the form of suspended solids and solids in solution, and is liable to putrefaction. The process of putrefaction causes foul odors and is apt to create a nuisance at the point of discharge.

(*b*) Sewage contains the germs or bacteria of certain diseases, especially the infection of typhoid fever. These germs are found mostly in connection with solid matters, particles of animal tissue, etc.

(*c*) The putrefaction of the organic matter will not cause any specific disease. The organic matter, apart from the disease germs it contains, is harmless, and the gases which are given off, causing the foul odors, are likewise harmless, as long as they are not in sufficient quantity to displace the natural oxygen of the air and thus cause asphyxiation. The germs of diseases are not carried by the gases and can only be liberated from the sewage by splashing in the immediate neighborhood of the disturbance. Sewer air (at one time thought otherwise) is not capable of spreading contagion. Contagion or infection is only obtained by direct contact of some particle of sewage, containing the disease germ with food (solid or liquid). If sewage contained no disease germs (no matter how foul the sewage or otherwise) it could not produce typhoid or any other disease even if it came into contact with milk or drinking water. The whole danger to health, the pathogenic danger, or the sanitary danger connected with the distribution of sewage, is entirely due to the specific disease germs which have originally come into contact with the sewage. Sewage in its purely chemical constituents is not dangerous. Sewage in its biological or bacteriological constituents is dangerous.

(*d*) The ultimate aim in sewage disposal may consist of (1st) only dealing with the organic matter in such a way that it will cause no nuisance, viz.: that at the point of discharge no putrefaction shall take place and thus no foul odors will be emitted, (2nd) dealing with the organic matter in such a way that all disease germs are exterminated, so that the power of distributing disease is taken away from the sewage, (3rd) dealing with the organic matter in such a way that both of the above objects are realized.

(*e*) It is known that when the organic matter in sewage comes into contact with a liberal supply of oxygen, that the organic matter undergoes a change which renders it non-putrefactive and no foul odors are emitted. In order to avoid any foul odors or nuisance from sewage all that is required is that it be partly oxidized.

(*f*) The sewage disposal systems which have aimed solely at the avoidance of a nuisance by systems of oxidation have not been sufficiently complete to destroy the germs of disease.

(*g*) In order to exterminate disease germs from sewage it is necessary to go a step further than merely to provide a non-putrefactive sewage, and to provide some efficient system of disinfection.

There is not one of the above general principals which can be picked out and allowed to be in contradiction to the conclusions of all the great authorities upon this subject. These conclusions are not new, they have been understood and acknowledged by scientific man for many years now. Wherein, then, is there any foundation for saying that "Old principles must give way to new?"

The fact of the matter is, it is not a question of principle, a question of what principle, but a question of application of acknowledged principles.

In Great Britain the general aim of sewage disposal has been and is to obtain a non-putrefactive effluent. The aim has been to remove sewage pollution from streams to the extent only of removing a nuisance. Average strength sewage contains approximately 3,000 pounds of dried solid matter per each 1,000,000 gallons of sewage, 200 pounds of which may be mineral and 100 pounds organic.

It has been found that in connection with rivers whose areas are thickly populated, that they cannot digest all this matter and that they become foul in appearance and color. In Great Britain, with one or two exceptions, the cities and towns do not obtain their domestic water supply from rivers flowing through inhabited areas. The water supply is generally from upland collecting areas or natural lakes where there is no chance whatever of sewage pollution. Hence, efforts in sewage disposal in Great Britain have almost solely been directed to preserve the natural beauty and æsthetic appearance of streams and not to make them fit as sources of water supply.

The city of London is an exception, as it takes its water supply from the upper Thames and its tributaries, which receive sewage only partially treated. The London water supply undergoes most thorough purification treatment before distribution.

A great many of the cities of the United States take their water supply from rivers receiving sewage. It is customary in the States to purify all such water supply and insist only on partial treatment of sewage.

The question of disinfecting sewage—that is, of exterminating the disease germs—is, from the view of application, comparatively speaking, new. It has never been pretended by those who knew, that the generally recognized methods of sewage disposal, produced drinking water. Fakers there have been who have set up such pretensions, but such have been connected solely with commercial ventures. Germany was the first country to apply the principals of sewage disinfection, and the States of America have given more attention to this part of the subject than Great Britain or any other country apart from Germany.

In 1909 E. B. Phelps, of the Massachusetts Institute of Technology, published a report of extensive investigations and experiments in connection with the disinfection of sewage. These investigations and results have brought the whole subject of the disinfection of sewage effluents acutely before sanitarians.

Phelps showed that sewage is amenable to high degrees of disinfection by the use, as a mixture, of very small proportionate amounts of chlorine derived from chloride of lime. He showed that 3 parts per million of chlorine will satisfactorily disinfect the effluents from ordinary sewage works constructed for the removal of putrescibility, the bacteria being removed by 98 to 99 per cent., the cost being from $1 to $1.50 per million gallons of sewage. He also showed that, from 5 to 10 parts per million of chlorine will disinfect screened or settled sewage (that is, sewage from which part of the solids have been removed), at a cost of from $1.50 to $3.50 per million gallons. Phelps showed that absolute sterilization was not necessary, and that partial sterilization or disinfection was sufficient to kill off the disease germs.

These practical investigations and conclusions were interpreted by some as likely to revolutionize sewage disposal processes. They form the only possible foundation for the somewhat vague supposition that "sewage disposal methods are undergoing a transision stage."

Such investigations have, however, had no appreciable effect upon the standard methods of sewage disposal.

The preservation of the natural condition and appearance of a stream and the avoidance of all nuisance from odors is just as an acute question as ever. Disinfection of sewage will not remove or diminish the 3,000 pounds of solids per 1,000,000 gallons of sewage entering a stream. Disinfection may retard putrefaction for a time, but only for a time. Disinfection will not satisfy the person who sees actual filth floating in a stream, no matter how sure he may be that all the germs of typhoid or otherwise have been eliminated. On the other hand, disinfection or elimination of disease germs added to the standard processes for the avoidance of actual nuisance may in many cases prove valu-

able, and prove not a revolution of standard processes but simply a development.

Disinfection of sewage effluents is likely to prove the most prominent and useful of modern features. It must be acknowledged that no sewage effluent if only treated up to the stage of removal of putrescibility has any right to enter a domestic water supply source. In the case of sources which are not available for water supply such may continue to receive either partially treated or even untreated sewage.

What are the western conditions, and especially what are the special conditions relative to Saskatchewan?

In this Province we have two large rivers, the north and south branches of the Saskatchewan River, which have their source in the Rocky Mountains. Other streams are small in capacity, mostly running dry in the summer season. This Province, unlike Great Britain, presents no features which will allow of collected upland waters. The annual rainfall is small, the ground porous, the country flat, and evaporation great. Apart from shallow surface wells, and the small creeks or streams, the two main factors of pure water supply are the two branches of the Saskatchewan River and the tributaries connected with them. It is absolutely essential, apart from æsthetic value, apart from the question of nuisance, and apart from any other question, that every effort be made to keep out of our rivers, streams, creeks and other visible sources of water supply all causes of disease infection.

What would you think if it was proposed to any municipality which you represent, that you spend several thousand dollars in avoiding an apparent nuisance to the senses and you were told at the same time that such an expenditure in no way affected the chance or otherwise of spreading typhoid?

Large cities with an abundance of capital available may be warranted in ignoring the question of perfect sewage disposal, because they can afford the expensive luxury of perfect water purification. But they are only warranted as far as the matter affects them locally. The small community, and the individual farmer, cannot afford expensive methods of water purification. A city may obtain its water supply from a polluted river and filter and so treat that water so as to render it pure. The city may receive its milk supply from farmers located on that river where the filtered city water is not available and where the farmer may have to depend upon unfiltered water for domestic purposes, washing of milk cans, etc.

Western Canada can, at the present time, boast of practically pure stream waters, from the sewage contamination point of view. The amount of sewage discharge is yet small; it will, however, be an increasing amount. It is for the western people to determine that they will unite in so treating all sewage effluents, that the greatest available quantity of water possible shall be preserved pure for domestic supply. It is in this connection that disinfection of sewage effluents is of more importance to Saskatchewan and the west than it is in Great Britain or in many parts of the United States, where the condition of the rivers has become practically hopeless.

The least costly and most efficient method of disinfecting sewage effluents is by the addition of small proportions of chlorine.

Chlorine cannot be economically or efficiently administered to sewage unless a large proportion of the solids are previously removed and the liquid sewage rendered non-putrefactive.

The admixture of chlorine does not revolutionize the standard methods of sewage purification. Where the standard methods were necessary in the past they are still necessary. Chlorine used as a disinfectant simply forms a continuation of the standard methods and forms a useful and practical adjunct to any sewage disposal system discharging an effluent into any body of water which during its course may be or is available as a water supply either to individuals or to communities of individuals.

In Saskatchewan at present the Government is insisting upon the purification of sewage to the extent of the elimination of disease germs where such effluents enter any body or channel or water which may be or is used for domestic water supply. Regina, Moose Jaw, Saskatchewan, Prince Albert, and many of the smaller towns are at present engaged in installing up-to-date systems of sewage disposal which are in accordance with the standard method

last which have in addition, the plant necessary for thorough disinfection.

Modern features of sewage disposal may be summed up as follows:

(a) The removal of a large proportion of the solid matter by screening and sedimentation in tanks.

(b) The removal of the tendency to putrefaction by bringing the liquid sewage into contact with oxygen, generally by use of aerated filters, or, when occasion will allow it, by dilution with large quantities of water containing the necessary dissolved oxygen required to oxidize the organic matter in the sewage.

(c) The removal of the tendency of the sewage to spread certain diseases if it comes in contact with food supply, or in other words, the disinfection of sewage by the elimination of disease germs.

Apart from the discharge of sewage into tidal basins it is generally necessary that the processes under (a) be followed. With efficient screening and attention much of the matter connected with nuisance production can be retained, and with the further application of sedimentation practically all the solids, apart from very fine particles, can be retained. Such an effluent, after screening and sedimentation, is amenable to disinfection by the of about 7 parts in 1,000,000 of chlorine. The question of leaving out the process of oxidation by means of aerated filters and relying upon oxidation by the body of water receiving the effluent depends as follows:—

(a) Upon local conditions, such as, the extent, freshness, flow or circulation of the body of water, and whether used as water supply or otherwise.

(b) Or, if disinfection be necessary, a careful study of the capitalized annual cost of the extra chlorine treatment required as against the capital cost necessary to install aerated filters requiring less chlorine.

In connection with inland streams and bodies of water which are required as sources of domestic water supply, it will generally be found that the whole three processes are necessary both from point of view of efficiency and ultimate economy. No cut and dried method of sewage disposal can, however, be laid down which will fit in with all conditions. Within certain limits the whole subject, like most other subjects, is subject to common sense.

FOODS AND THEIR RELATION TO PUBLIC HEALTH

BY P. B. TUSTIN.

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The study of the evolution of man from earliest ages to the present day, shows that any marked improvements or progress made by him were largely due to improved methods of obtaining or preparing his food.

The factors which in prehistoric times determined the food of man are three in number:

1. The kind of food available (the local flora and fauna).

2. The instinctive liking for certain kinds of food.

3. The ability to secure the desired food.

As evolving man became more intelligent, he discovered methods of acquiring and preparing food which greatly increased his supply, such as improved hunting weapons, cooking and agriculture.

In the prehistoric period man's food consisted mostly of seeds, nuts, fruits, roots, seaweed, fungi, and shellfish.

In these ages man had to subject his food to thorough and prolonged mastication in lieu of cooking to break up the indigestible cellulose chambers surrounding the starch protein and

fat cells in his vegetable food, which was very much coarser and rougher than the vegetable foods produced by modern agricultural methods. As the intake of starchy foods in this early period was, therefore, necessarily limited, it will be seen that until the invention of cooking the stomach of evolving man had little acquaintance with undigested starch, it being obvious that it was fully submitted to amylolytic influence, owing to the thorough mastication.

On the invention of cooking, man's food became more plentiful, as by this means he was able to soften his vegetable foods and make many of them more palatable.

The period of agriculture may be divided into two sub-periods:

The migratory — in which small suitable plots of virgin soil were planted after little (if any) preparation, to be abandoned after the harvest had been reaped; and the period of stationary agriculture, which dates back before the flood — in which the ground was scientifically treated, and raised enormous crops, and animals were domesticated and bred for food.

During the last 100 years, however, tremendous strides have been made in methods of preparation, preservation, refrigeration and transportation of food. We are enabled to draw almost on the whole universe for our food supply, there being few parts of the earth's surface so barren or so remote as to yield nothing to the general stock.

In these days of rush and worry, instead of being looked upon as one of the pleasures of life, and meal-times as pleasant breaks in the monotony of the day's work, the business of eating is regarded as more or less of an unfortunate necessity, to be gotten over as quickly as possible. As a consequence, very little thought is given to the use of food, the object only being to get something soft and easily swallowed Therefore, as the greater bulk of our food has come to be soft cooked starchy material, such as bread, potatoes, cereals, etc., the stomach gets loaded down with undigested starch (due to improper mastication) and as a result the food, instead of being properly assimilated, is the cause of many ailments.

Health depends largely on digestion, this process being carried on in the alimentary canal, which may be regarded simply as a hollow muscular tube richly supplied with blood vessels and bathed with digestive juices, yielded by glands situated along its course, and lined by epithelum from which these glands are developed, and which, along a great part of its length, has the property of absorbing nutritive matter.

The food first, in the process of chewing, is brought into intimate relation with the saliva, and the importance of thorough mastication is shown by the frequency with which indigestion follows, when teeth are lost or food is eaten too rapidly.

Then in the stomach, digestion proper begins, the food being rendered soluble and capable of absorption. It is not sufficient for the material to be broken down and dissolved. The materials will not be absorbed by the intestinal walls, unless certain definite compounds are formed. From the stomach the food passes into the intestines where absorption usually takes place.

If we glance at the vegetable foods of the present day, we find that hardly any of them require mastication. Boiled vegetables are all soft. The starchy foods, such as potatoes (often mashed), bread (mostly new), (and with little crust), porridge, gruel, breakfast foods, milk puddings, of rice, sago, tapioca; pastry, macaroni, blancmange, cakes, biscuits, and other articles too numerous to mention. Of all these, bread crust and biscuits are the only ones that tend to properly excite mastication, but the former are often avoided and the latter often very soft. The rest follow the lines of least resistance, and slide down into the stomach with pernicious ease, and afford little or no exercise for the jaws or salivary glands.

Modern food is also highly concentrated, how very condensed it is, does not seem to be adequately recognized Milk, eggs, fish and meat are highly nutritious, the same is true of our more important vegetable foods which contain a high percentage of protein and starch; it would, therefore, be difficult to prescribe an innutritious diet unless of green vegetables and fruits.

Man has learned to separate the nutritious and energy-yielding foodstuffs from their natural combinations, and we now get practically pure protein fat, starch and sugar in the form of butter, cheese, sago and tapioca, beet and cane sugar. This extreme concentration of modern diet seems

responsible for the present prevalence of constipation by promoting overeating and having a tendency to weaken the whole digestive system. Seldom does the city man of to-day sit down to a meal really hungry, owing to the sedentary nature of his work. In early days when man had to hunt his food, it meant a great deal of exercise; game had to be hunted and roots, fruits and nuts gathered; and although he may have had his periods of gourmandizing, he also had his periods of fasting. Even in those primitive races remaining in the world to-day, such as Bushmen of Africa, and the aborigines of Australia, obesity and decayed teeth are unknown.

The dietetic instinct undergoes marked changes during advancing years, children show a fondness for sugar and starchy foods, but there is a marked decrease in this class of food, as middle life is reached.

The modern wife and housekeeper does not consider the reputation as a culinary artist, as something to be proud of, and seldom is able to show her friends into a well-stocked pantry or storeroom, filled with the results of her own work. The very nature of the food in middle-class households is changing; instead of coarse oatmeal porridge, some extensively advertised cereal (perhaps pre-digested) is found in many instances, the wholesome joints and stews of a generation ago are replaced by chops and steaks, and jams, preserves and cakes are bought, instead of being home-made. All this is done to save time, and what little knowledge they really had regarding their food is rapidly being lost.

Children are given anything for which they ask or cry for, many being regularly fed on the same food as adults, which food is quite unsuitable for them. Babies are artificially reared in the vast majority of cases, and all these conditions are bound to have a great effect on future generations.

The question now that arises is "What is the ideal dietary for a healthy man?" It would be impossible for the physiologist to draw up a table of foods and say "That is the correct diet for a healthy man." Consideration has to be taken of the idiosyncrasies of individuals — for instance: a lumberjack consumes a great deal of energy and his muscles produce much waste, whereas, a bank manager has little muscular work, but much thought and anxiety; the diet of the lumberjack must therefore be not only larger in quantity to supply energy to his muscles, but different in kind to that demanded by the brain of the banker. The lumberjack requires large quantities of carbo-hydrates, but with the banker (if not an active man) a small quantity is advisable.

An ideal diet is a diet where the protein fat, etc., are properly balanced and sufficient to maintain the individual at the lightest weight consistent with perfect health. It should be simple in quality, consisting of plain bread, vegetables, meats, fish, puddings, etc., cooked without highly spiced condiments and sauces. A simple diet excludes alcohol and strong spices.

The starchy foods of the ideal diet should be taken in a form compelling vigorous mastication and a certain amount of uncooked fruit or vegetables (such as apples, celery or lettuce) should be eaten daily raw. Water should be the staple drink. Digestive troubles are rarely met with in the army, navy, workhouse and prisons, where the food is simple and the meals regular.

Man would avoid many of the ills of the day if he were to give his own diet the same consideration that the horse owner gives to the diet of a favorite animal.

Most men would have far better health and get more pleasure out of life, if they ate and drank according to their actual requirements. Excesses in the matter of diet lead to a long train of disagreeable symptoms — indigestion, constipation and often serious diseases. The proper time should be taken over meals, and cheerful subjects discussed. "Dollars and real estate" are not conducive to good digestion, and subjects concerning the source of the food supply and many interesting facts concerning its preparation (if discussed at meal times before children) would prove a valuable means of education. It comes as a surprise to most people to learn that they draw on the whole universe for their daily food. Many diseases can be cured and prevented by proper diet, which will not yield to drugs or physic, and the physician should make himself familiar with the values of the necessary foods and a table such as found in text books will enable one to prescribe a suitable dietary for both rich and poor.

In a field that has been over-fertilized

by putting too much manure on it, we get a rank growth of weeds, but in a field that has just sufficient fertilizer, the weeds are kept down and a healthy crop is the result; so with our bodies, if any disease germs get into the blood stream and if, instead of being carried by the blood cells to the lungs to be oxidized, they are deposited in some congested portion of the system, over-fertilized with nutritive matter, they find a favorable field for growth, and disease is the result.

Purgatives and aperients may empty the intestines, but they do not remove the excess of nutritive matter in the blood, restricting the diet is the only treatment. I think that there is a great field of useful work open, to educate the public on matters dietetic, and the need of it may be perhaps best illustrated by giving an ordinary every day case which will also show the close relation between food and disease: "An expectant mother is advised by well-meaning but ignorant friends to eat for two; and increases her ordinary diet by perhaps one-half to three-quarters of one pound per diem; when we realize that she carries the unborn child for the period of nine months (and the average child when born weighs 8 or 9 pounds), the increase of one-half pound per day in her diet for that period is out of all proportion, and as a result her body gets much congested and paturition troubles follow. The child, when born, is probably raised artificially on the bottle; the milk, perhaps, has been exposed to the air, in an open jug some hours before use, or to contact of flies; consequently it contains millions of bacteria, and summer complaint and diarrhoea follow.

After weaning, at the school age, the child is often, in this country, allowed to partake of practically the same food as that of the parents, which in most cases is quite unsuitable, and it is a common practice to give candies and cakes between meals, etc. Most people are very particular about the course of study their children undergo, what the subjects are to be, etc., and a parent that told his son to choose his own education and pick out his own subjects, would be considered mentally unsound. How, then, I ask, can a child be expected to choose the most suitable diet for himself, and yet many parents let their children eat just what they like, whether suitable or not. From school age onward we find the same detrimental thing, the hurried meal at the lunch counter and restaurant, indulgence in banquets, late suppers and alcohol at various times between meals or otherwise. Is it to be wondered that nature revolts at such ill-usage?

In conclusion, I would say that the best and only natural way to obtain the greatest benefit from our food is to eat moderately, masticate thoroughly, and allow sufficient time for the stomach to digest one meal before partaking of another.

THE NEW PUBLIC HEALTH ACT AS IT AFFECTS PROVINCIAL MUNICIPALITIES

BY E. M. WOOD

SECRETARY OF THE MANITOBA BOARD OF HEALTH

It is a matter for congratulation that at the last session of the Manitoba Legislature a comprehensive Health Act was enacted. Its provisions embrace adequate essentials to provide for and improve the sanitary conditions of the Province and to better control infectious and contagious diseases and protect human life. Prior to the passing of the present Act the provisions theretofore in force were glaringly deficient in this respect, and in other ways necessary to deal with the varied problems of public health. Exceedingly satisfactory, therefore, is it that we now have a Health Act carefully compiled and which cannot fail to accomplish a decided improvement in public health administration throughout the Province. Already, although it has only been in effect a few months, a

decided improvement is noticeable. The new Act contains about 120 pages of printed matter, and deals with every possible matter likely to arise. The functions of the Health Board have been very materially amplified, power being given to the Board to make regulations dealing with a large variety of cases for the prevention, treatment, mitigation and suppression of disease, comprising the abatement of nuisances, the cleansing, purification and ventilating of houses, the inspection of public institutions and places, the construction of drains, the carrying on of offensive trades, the construction and maintenance of slaughter houses, the isolation of infectious diseases, the equipment and management of creameries, the pollution of streams and in a large number of additional cases. These provisions are in addition to the direct requirements of the Act in such cases, and have been introduced for the purpose of giving the Health Board power to amplify the same by specific and direct regulation should occasion require such action. Greater power has also been given the health officer in matters affecting the administration of the provisions of the Act. Under the old provisions the machinery was most cumbersome, the health officer in many important cases being permitted to act only in conjunction with and by the consent of the mayor or reeve, which was impracticable. Upon the health officer has been placed the performance of many important duties; the position or office of a municipal health officer has now been made a most important one, and is this not a step in the right direction? What municipal office is more important than to teach the people the essentials of good sanitation and the value of the preservation of health and the prevention of disease? In the past the old teaching was based on the cure of disease. Under the more modern conditions the prevention of disease is emphasized. At one time our whole concern was about the sick; we now think about the well, as it naturally follows that if people can be kept well by living under favorable conditions, sickness will materially diminish. Most important is it, therefore, that every municipality should have an energetic health officer. The value of such an official is beyond measure. The compensation advantages in such cases not only involve the wealth and progress of communities but their health and life.

Passing on to other provisions of the new Act, most drastic enactments are introduced for the suppression of nuisances. In the past nuisances were created by individuals to the detriment and injury of the public health. Heavy penalties now exist for practices of this kind, and proper is it that the law so provides, as what more objectionable conditions in a community can possibly exist than the indiscriminate creation of nuisances? It has been well said: "If you desire to know what kind of people live in a community and their standard of health, examine the back yards and alleys." It is an unerring test of the character and health of the people. Municipalities, therefore, should take pride in maintaining strict sanitary methods — it will not only preserve the public health, but will be a strong factor in attracting others to such localities.

The matter of the food supply to the people is also fully dealt with under the new Act. The exposing or selling of impure articles of food unfit for human consumption is strongly provided for and heavy penalties provided for violations. It is also necessary for all meat shops and other places where food is kept for sale to be inspected and for such places to comply with certain sanitary requirements. Bakeshops are also similarly dealt with. A standard of milk is also provided, which must consist of not less than .25 per cent. of milk fat and not less than 8.50 per cent. of milk solids other than fat. Milk houses and creameries are subject to inspection and such premises must comply with the requirements as to construction before a license can be obtained. The provisions as to the handling of this class of food product are most drastic, and most properly so, as there is no kind of food more important to have pure and free from disease germs than milk. Particularly is this accentuated in view of the recent report of scientists that consumption is transmissible to man from animals.

The proper sanitation of restaurants, laundries, livery stables are also adequately dealt with.

Another most important introduction in the new Act is the prohibition of the construction of the hole-in-the-ground privy — of all the causes of the spread of

infection this constitutes the worst. It is now made unlawful to construct any kind of privy other than that prescribed by the Act. In future they must be constructed with concrete or brick pits lined with cement, so as to be perfectly water tight. A full specification as to size, etc., of this class of building is set forth. Diagrams will be furnished by me on application.

With the view of preventing the creation of overcrowding, and eventually slums in the larger centres of population, very comprehensive provisions have been enacted as to the erection of tenement or apartment houses. It is now provided that no tenement or apartment building shall hereafter be constructed which shall occupy more than 75 per cent. of the area of a corner lot, or more than 80 per cent. of the area of any other lot. This will have a decidedly deterrent effect upon persons crowding buildings for residential purposes upon the whole area of lots with the view of gain and without regard to the inmates of such places.

Most full and complete provisions appear relative to the control of infectious and contagious diseases. The health officer is clothed with the widest powers in this respect. The proper embalming and transportation of dead bodies is also fully covered. Provisions for vaccination and the free supply of vaccine and anti-toxin for diphtheria are also inserted —also as to tuberculosis, the sanitation of railway cars and a variety of other subjects all vitally important in public health administration.

In a brief space I have endeavored to shortly point out the salient features of the new Manitoba Health Act. The Board of Health are alive to the importance of its proper application, and the public may be assured that it will be applied in every manner possible in order to bring about improved conditions. To accomplish great results, however, the sympathetic support and co-operation of the public is necessary; and this must follow education and persuasion, upon which to a very large extent public health depends.

Library and Laboratory

BOOK REVIEWS

"School Planning at Home and Abroad," Health and Disease," "Crime and Insanity," "Medico-Legal Aspects of Moral Offences," "Hygiene and Public Health," "Merck's Manual of the Materia Medica," "A Practical Medical Dictionary," "Tuberculosis Directory," "High Potential and High Frequency Current," "Prevention of Infectious Diseases," "What to Eat and Why," "Architectural Hygiene," "Rural Neurasthenia."

"School Planning at Home and Abroad."

This interesting little book, which merits a wide and careful study, is a revision and finely illustrated extension of a paper entitled "Large Public Elementary Schools in Town Districts," read by the author, William H. Webb, at the 25th annual congress of the Royal Sanitary Institute. Mr. Webb describes, with the assistance of numerous plans, the prevailing English type of large public school, and compares it with American, Danish, German, French, Norwegian, Swedish, and Swiss types — to the manifest advantage of the latter. He points out, however, that the recently designed Durnsford School at Wimbledon conforms more closely to modern hygienic principles, as shown in the five illustrations which accompany the work and are drawn to scale.—*School Planning at Home and Abroad. A Resume of English, Continental, and American Practise. By William H. Webb, Licentiate R.I.B.A., M.R. San.I. With numerous illustrations. London: The Sanitary Publishing Company, Ltd., 5 Fetter Lane, Fleet Street, London, E.C. 1911. 1/ nett.*

"Health and Disease."

W. Leslie Mackenzie's originality of thought and expression is well demonstrated in a recent contribution, entitled "Health and Disease," No. 17, to the Home University Library. "It is the note of youth," he writes in his first chapter, asking What is Disease? " when the claim to health is strongest. It is the note of middle age when fear of lost health begins. It is the note of mature age when the memories of youth begin once more to predominate. Science has no place for an ideal of absolute health. All that science, which is the sum of experience, permits us to entertain, is a normal balance of functions relative to a place in the world."

Dr. Mackenzie then points out that health is the name given to total average of the highest physiological efficiency; the mainitenance of the physiological normals at their highest potency being health.

The remaining chapters of the book deal with: The Causes of Death; Death rates and their Interpretation; Fever; Infectious Diseases and Epidemics; Study of Toxic Infection and its Antitoxin; How Antitoxins are Produced and Prepared; Immunity; A Study of the Tubercular Diathesis; The Administrative Aspects of Tuberculosis; The International Infections; Other Preventable Diseases; The Hygienics of a Staple Food (Milk); The House as Immediate Family Environment or Home; Disease and Destitution; Insurance Methods of Preventing Sickness; and, The Evolution of the Health Movement.—*Health and Disease, by W. Leslie MacKenzie, M.A., M.D., D.P.H., F.R.C.P., Ed., Medical member of the Local Government Board for Scotland. 254 pages. London: Williams and Norgate, 14 Henrietta St., Covent Gardens, W.C. 1/ Nett in Cloth. 2/6 Leather Gilt.*

"Crime and Insanity."

Here we have number 22 of the Home University Library of Modern Knowledge, and a very excellent little book it is.

Dr. Charles Mercier, the author, during

the course of his extensive professional experience among the mentally aberrant has arrived at conclusions regarding the nature of insanity, which are logical and interesting. He proves that the relation between crime and insanity is a biological one and based upon the three fundamental incentives of action: Perpetuation of the Race, The Conservation of Individual Wealth, and the Conservation of Society.

In defining crime and defining insanity, Dr. Mercier writes that crime, in the wide sense, consists of acts that are forbidden by law — and law forbids those acts that are inimical to the cohesion of society — and that insanity is disorder of the process of adjusting the self to the circumstances, it being primarily manifested in disorder not only of the mind but of the conduct. In true insanity the insane person does not recognize that either mind or conduct is disordered.

This consideration of crime and insanity is divided into nine chapters, followed by a note on books of reference — the chapter headings being: Insanity and Crime; Self Advantageous Offences Committed to Gratify Malice and for Personal Gain, Private Offences, Family and Racial; Crime and Insanity.

Dr. Mercier dedicates his book "To David Yellowlees, M.D., LL.D., in token that the widest differences of opinion are compatible with the warmest friendship. — *Crime and Insanity, by Charles Mercier, M.D., F.R.C.P., F.R.C.S., Physician for Mental Diseases to Charing Cross Hospital. Visitor to the State Inebriate Reformatory. London: Williams and Norgate, 14 Henrietta Stree, Covent Garden, W.C. 1/ Net in Cloth. 2/ in Leather Gilt.*

"Medico-legal Aspects of Moral Offences."

After reading Dr. Charles Mercier's "Crime and Insanity," reviewed above, one appreciates to the fullest extent the manner in which Medico-legal aspects of moral offences are handled in the book of that name, by Professor L. Thoinot, translated into English and enlarged from the original ("Attentats Aux Mœurs et Perversions du Sens Gential"), by Dr. Arthur W. Weysse.

In the light of fuller knowledge of the fundamental incentives to human conduct, such perversions of the sexual instinct as described in Professor Thoinot's work, take on a wider meaning; and one is impressed with the possibility of methods of prophylaxis.

Medico-legal Aspects of Moral Offences is published for and restricted to the medical and legal professions. It deals with: Anatomical Facts; Rape; Indecent Assaults; False Assaults; Public Offences Against Decency; Perversions of the Sexual Instinct; Inversion of the Sexual Instinct; Uranism; Exhibitionism; Fetichism; Sadism; Masochism; Bestiality, Necrophilia; Nymphomania; Satyrism; Erotomania. These subjects are presented more fully than has been the practise in English and American professional schools. — *Medico-legal Aspects of Moral Offences, by L. Thoinot, M.D., Professor in the Medical Faculty of Paris; Physician to Lannec Hospital. Expert to the Tribunal of the Seine. Member of the Academy of Medicine and of the Society of Legal Medicine of France. Translated from the original French and enlarged by Arthur W. Weysse, A.M., P.H.D. (Harvard), M.D. (Basel). Illustrated with 17 engravings, including 4 charts and diagrams. Only authorized translation into English. Cloth, 487 pages. Philadelphia: F. A. Davis and Co., Publishers. 1911.*

"Hygiene and Public Health."

In the words of the authors, the object of this elementary manual is to summarize, in a condensed and succint form, the most important applications of preventive medicine, especially as they concern the routine duties of the medical officer of health and the school medical officer. The present new revised and enlarged edition is the twelfth; and this in itself speaks well for the popularity of the work. In bringing *Hygiene and Public Health* fully up to date, its enlargement was required by the necessity of dealing with the recently improved methods and appliances, fuller and later statistics and researches, and larger knowledge of the etiology of disease and of the conditions of its progress and prevention. Elucidating the subjects of its twenty-two chapters are fifty illustrations —the chapters taking up in order: Air; Meteorology; Water; Food; Soil; Build-

Inspection; School and School Hygiene; Hospitals; Drainage and Removal of Refuse; Disposal of the Dead; Animal Parasites; Infection and Immunity; Specific Diseases; Tropical Diseases; Prevention of Infectious Diseases; Disinfection; Medical Officers of Health; Sanitary Inspectors; Sanitary Law; Factories and Workshops; Military and Naval Hygiene; By-Laws and Regulations; and, Vital Statistics.

The appendices consist of tabulated information of special value.—*Hygiene and Public Health, by Sir Arthur Whitelegge, K.C.B., M.D., B.Sc., Lond., F.R.C.P., D.P.H., and Sir George Newman, M.D., D.P.H., F.R.S.E. Illustrated. Twelfth edition, revised throughout. 760 pages. London: Cassell and Co. 1911. $2.50. Toronto: D. T. McAinsh and Co.*

"Merck's Manual of the Materia Medica"

The fourth edition of this ready reference pocket book for the physician and surgeon, comes to us containing a comprehensive list of chemicals and drugs not confined to Merck's, with their synonyms, solubilities, physiological effects, therapeutic uses, doses, incompatibles, antidotes, etc.; a table of therapeutic indications with interspersed paragraphs on bedside attendance, and a collection of prescription formulæ (beginning under the indication "Abortion," and ending with "Yellow Fever"); a classification of medicaments and miscellany comprising poisoning and its treatment, and an extensive dose table; a chapter on urinalysis; and, various other tables.

While compiled for the use of physicians there is much in Merck's Manual regarding the Materia Medica, Doses, Urinalysis, etc., to make it a serviceable reference work for pharmacists also.—*Merck and Company, 42 Park Place, New York. 1911. 493 pages. Sent on receipt of forwarding charges of 10 cents, to any physician or pharmacist, or to students enrolled in any college of medicine or pharmacy in Canada or the United States.*

"A Practical Medical Dictionary."

The high place occupied by Thomas Lathrop Stedman in the world of medical and general science is sufficient to mark any reference work of his as the *sine qua non* of a working library. "A Practical Medical Dictionary" comes to us under such auspices. It is a beautifully bound handbook, well printed, adequately illustrated and generally attractive; and the fact of its publication by William Wood and Company is an additional incentive to purchase.

Dr. Steadman has incorporated in this dictionary everything usually found in a work of its class, and more. And he has adopted the reasonable policy of a conservative lexicographer in throwing the weight of his authority on the side of etymologically correct terms while not neglecting the sufficient treatment of those commonly used words of questionable parentage which have crept into the language, as it were, unawares.

A splendid feature of the work is the attention paid to synonyms; another, the lists in distinctive type following a term defined, where required, and recording the various conditions associated with the part which may be indicated.

Other excellent features are the preference given to the Basle Anatomical Nomenclature, the definition of terms peculiar to the various medical sects (happily under the influence of public health investigation, and the better understanding brought about by such definition, now losing distinction), the preference given to simpler spelling, the introduction (to help the reader who may be rusty in his chemistry) of common chemical formulæ, as main titles followed by simple definitions, and the inclusion, among the terms considered, of those likely to be met with from botanical, dental, veterinary and other sciences.—*A Practical Medical Dictionary, of words used in medicine with their derivation and pronunciation, including Dental, Veterinary, Chemical, Botanical, Electrical, Life Insurance and other special terms; anatomical tables of the titles in general use, and those sanctioned by the Basle Anatomical Convention; Pharmaceutical preparations official in the British and U. S. Pharmacopeia and contained in the National Formulary; Chemical and therapeutic information as to mineral springs of America and Europe; and, comprehensive lists of synonyms. By Thomas Lathrop Stedman, A.M., M.D., Editor of "Twentieth Century Practice of Medicine"; Editor of the "Medical Record". Illustrated. 1,000 pages. Bound in lea-*

ther. New York: William Wood and Company, 51 Fifth Avenue. 1911. $5.00 Net Indexed. $4.50 Net Plain.

"Tuberculosis Directory."

The publication of the present directory follows that of 1908 and no effort has been spared by the National Association for the Study and Prevention of Tuberculosis, to make this edition as complete as possible; at the same time an attempt has been made to exclude all private institutions of an undesirable character.

The anti-tuberculosis agencies of Canada have been grouped in an independent section, which is, perhaps, a better arrangement than that formerly adopted.

From statistics published in the new directory, it is ascertained that over 600 cities and towns of the United States, besides about 100 in Canada, are engaged in the war against consumption, and that on April 1st there were nearly 1,500 different agencies at work in the crusade, an increase of nearly 700 per cent. in the last seven years.

The new Directory lists 421 tuberculosis sanatoria, hospitals, and day camps; 511 associations and committees for the prevention of tuberculosis; 342 special dispensaries; 68 open air schools; 98 hospitals for the insane and penal institutions making special provision for their tuberculosis inmates; besides giving an account of the anti-tuberculosis legislation in every state and in about 250 cities. The Directory, which is the third of its kind that has ever been published on the continent, gives the most complete survey of the anti-tuberculosis movement that can be secured, and shows the remarkable growth of this campaign in the last seven years. The first Directory in 1904 showed only 183 organizations and institutions in the entire country. The second Directory, in 1908, reported 649 different agencies, as compared with 1,440 in the new book. Taking these figures as a basis, the anti-tuberculosis movement has increased in force since 1904, nearly 700 per cent., and since 1908, over 105 per cent.

The following table shows the growth of the movement along the principal lines of activity for each year since 1905:

Year.	Associations.	Sanatoria and Hospitals.	Dispensaries.	Open Air Schools.
Established before 1905	18	111	18	..
Established during 1905	15	18	6	..
Established during 1906	18	16	14	..
Established during 1907	46	30	45	1
Established during 1908	109	45	118	2
Established during 1909	167	67	59	10
Established during 1910	117	68	62	16
Established during 1911 (April 1)	21	66	20	30
Total	511	421	342	68

—A Tuberculosis Directory, containing a list of institutions, associations and other agencies dealing with tuberculosis in the United States and Canada. Compiled by Philip P. Jacobs, Ph.D. New York: The National Association for the Study and Prevention of Tuberculosis. 1911. 50c. postpaid.

"High Potential and High Frequency Currents."

This work contains the results of the author's personal researches and investigations, and includes most that is valuable on the subject of High potential Currents. The developments in the subject of hypertension and its treatment by the d'Arsonval current, as well as the employment of direct d'Arsonvalization in the treatment of infection, have been thoroughly considered in this edition.—*Currents of High Potential of High and Other Frequencies. Second Edition, by William Benham Snow, M.D. Author of "A Manual of Electro-Static Modes of Application, Therapeutics, Radiography, and Radiotherapy," "Therapeutics of Radiant Light and Heat and Convective Heat," Editor of the Journal of Advanced Therapeutics, and late Instructor of Electro-Therapeutics in the N. Y. Post Graduate School and Hospital,*

etc. New York: The Scientific Authors' Publishing Co., 329 West 57th Street. 277 pages. 260 illustrations. $3.00 net.

"The Prevention of Infectious Diseases."

"Prevention of Infectious Diseases," is written in Dr. Doty's logically attractive style, and convinces the reader at once of the legitimacy of its claim to be authoritative.

The author deals with his subject from a practical standpoint, presenting the latest knowledge relative to transmission of infectious diseases with proved methods of prophylaxis bearing on the same; not neglecting, however, to emphasize the fallacy he finds in fomites and other theories, long acceptance of which has aided, he believes, in the extension of infectious diseases rather than their prevention.

The views Dr. Doty expresses, strongly based on his own official experience, while iconoclastic would undoubtedly be corroborated by the majority of practical sanitariums; and are certainly not to be ignored by any who lay claim to efficiency in either medical inspection or general practice. — *Prevention of Infectious Diseases, by Alvah H. Doty, M.D., Health Officer, Port of New York. Crown 8vo. 351 pages, with full index.. New York: D. Appleton and Company. 1911. Cloth, $2.50 net.*

"What to Eat and Why."

The desire of the author in writing this book is to place before the student and the practitioner the principles underlying therapeutic uses of foods. He points out that the general questions to be settled in arranging the proper diet of the patient are two: "How much protein shall be given?" and "What the proportion of carbo-hydrates shall be?"

In Dr. Smith's remarks on the question of the use of alcohol, which will be undoubtedly approved by the majority of practicing physicians, he does not recommend its use for young adults; but for the active business man who has passed middle life and is subject to mental and strenuous physical activity, at times causing exhaustion that cannot always be practically treated in the most desirable way by rest and sleep, the stimulus of alcohol seems, he believes, to afford the necessary prop and is less harmful than giving up the struggle in the business world would be. In dealing with alcohol the author recapitulates in order not to be misunderstood, as follows: 1st, "Alcohol, except in diseases, is unnecessary and to be avoided in persons, male or female, under 30 years of age." 2nd, "Its occasional use in middle adult life as a stimulant, prophylactic and anesthetic, is advisable, and should be used under the doctor's direction, who knows its food value and danger of habit." 3rd, "After fifty it may be used in some cases with benefit, but always in moderation. Most of the disadvantages of its use now no longer obtain. At this age, however, it disagrees with many people, and should be used by such only as medicine." 4th, "Alcohol should never be given in excess, except for its anesthetic effect, as it weakens the will power." 5th, "When alcohol is given it should always be in the purest form. Whiskey, sherry and Rhine wines are among the best. Strong liquor should always be well diluted with water."—*What to Eat and Why, by G. Carroll Smith, M.D., of Boston, Mass. Octavo of 310 pages. Philadelphia and London. W. B. Saunders Company. 1911. Cloth, $2.50 net. The J. F. Hartz Co., Ltd., Toronto.*

"Architectural Hygiene."

This little book is one of the most useful that it has ever been our pleasure to come across. It treats of the subject in all its branches, as it effects architects, surveyors, engineers, medical officers of health, sanitary inspectors, plumbers, and students generally.

The authors rightly point out that the hygiene of architecture is one of the most important subjects which the architectural student has to study, for on its proper application in the buildings erected under his supervision depends not only the health and well being of his clients, but often their very existence. And sanitary science is the bridge connecting the architectural and medical professions.

The chapter heads, as follows, give one an idea of the extent and value of the work: Sanitary Legislation; The Site and Foundation; The Plan in Regard to Health and Convenience; Sanitary Con-

struction; House Drainage; Drain Ventilation, including Siphonage and Traps; Sanitary Fittings; The Collection and Disposal of Refuse and Sewage; Typical Drainage Plans; Water Supply and Pollution; Water Supply Fittings; Ventilation; Heating; Ventilation and Heating Schemes; Lighting; Sanitary Inspection; Surveys and Reports; Sanitation of a Country House; Lighting, Heating, and Ventilating a City Company's Banqueting Hall.—*Architectural Hygiene or Sanitary Science Applied to Buildings. A Text-book for Architects, Surveyors, Engineers, Medical Officers of Health, Sanitary Inspectors and Students. Written and fully illustrated by Banister F. Fletcher, Architect, Fellow of the Royal Institute of British Architects; Fellow of the Surveyor's Institution, Barrister-at-law of the Inner Temple; and H. Phillips Fletcher, Architect, Member of the Royal Institute of British Architects, Fellow of the Surveyor's Institution, Associate Member of the Institute of Civil Engineers, Barrister-at-law of the Middle Temple. 334 pages. Published by Whittaker and Company, 2 White Hart St., Paternoster Sq., London, England: The Sanitary Publishing Co., 5 Fetter Lane. 1911. 5/ net.*

"Rural Neurasthenia."

Rural districts have been the scapegoat for many years to be loaded with all the ailments that man is heir to, typhoid and infections in general, but the finishing straw comes now in the discussion by Dr. Raymond Belbeze, who has issued a little book on *Rural Neurasthenia*. It has been believed that the country is the place to which to fly for rest and quiet, it is recommended for those who have nerves, and it must come as a shock if the statement of Dr. Belbeze can have authoritative backing, "that thirty per cent. of the peasants of France have neurasthenia and the ratio is increasing from year to year." The studies of the physician have been made during the past four or five years in the Garonne region between Agen and Montauban, a district central in the width of this Pyrenean neck of France and somewhat more than one hundred miles north of the southern mountain boundary. The departments are Tarn-and-Garonne, through which the river flows, Lot-and-Garonne, the department next down the river, and Gers, the adjacent county to the south. The disclosures are startling, in that this is suggested to have close relations with the depopulation of France, and the much discussed decline in the birth rate. Tarn-and-Garonne as early as 1842 showed an excess of 179 in deaths over births in the annual figuring, and since 1870 "this excess has done nothing but grow," reaching 834 in 1899. In the 57 included years the department lost 40,000 inhabitants.

As to the condition of these people, Dr. Belbeze depicts it in discouraging terms. The malady presents first physical symptoms, insomnia and disturbing dreams, head ails, digestive troubles and those of the circulation and hypochondria. "The mental symptoms," he notes, "are not less marked: lack of will, emotional condition such that the mere receipt of a letter is sufficient to upset the existence, and the like." Nothing is wanting in the picture shown and the peasants are represented as ignoring no one of the mental anguishes or physical ailments that have till now been the especial perquisite of the refined who live in the turmoil of the cities.

The story needs but one more embellishment to round it out to full measure, and that the French physician does not fail to furnish; that the symptoms and effects should be in the country more marked and severe than in the town. "Slowness of decision, not unusual among peasants, becomes impossibility of any decision." The physician has seen his farmers neglect, through morbid hesitation, even to harvest their crops when ripened. He has known them to leave the fields for the villages to avoid risks more or less imaginary. Such shirking of responsibility leads later to avoiding other responsibilities to the family and the nation, hence the proverbial single child, in whose uniqueness there is combination of local superstitions concerning the ill-luck to all of large families.

There are certain economic roots to the general spread of nervous ailments. In Tarn and Garonne country land values have steadily gone down, till to-day the farms are worth not half their price in 1881. The growing of flax, hemp and other items have been successively given

up and the cultivation is less successful than formerly. "Thus," writes Dr. Belbèze, "the Garonne farmer loses not only in taste and comfort, but is wounded in his pride." And nothing is done for the defence! Education in the schools, and still more that at home, softens the character instead of strengthening. The farmers see in their children deplorable weakness but do not know how to combat it. A little fellow, invited to the cafe by his father, must needs procure a box of rice powder, kid gloves, and array himself in grand toilette, while in other families a lad is the leader of them all by his caprices. "Neurasthenieulture," is the word Dr. Belbèze has coined for the occasion.

Over-tasks of labor in the fields and insufficient nourishment are causes of the trouble, with increase among the poorly fed. The people in which the figures have been obtained live almost exclusively on vegetables and sweets. Meat is seldom on the table, and the fruits are treated with disdain. Besides economy is an insistent master. Thus it is that a people, already enfeebled by centuries of isolation, and subject to defective alimentation, is losing the nervous force that alone can be its main help in regaining its proper place.

While Garonne is said to be the district in which the conditions are the most alarming, it is not the only one in which the stagnation of population is sensible, and the peasants are showing symptoms of nervous fatigue. The situation is not, however, hopeless. "In time the State authority may be awakened, but yet troubles itself but little with the public health, and it has not yet even ordered an inquiry as to the real causes of the depopulation of France." The Garonne peasants are the premonitory symptom. Nothing can be more easy than to infuse new blood into their district, by favoring, for example, the colonization by Spaniards who have already begun to settle in Gers; and immigration agencies, after the pattern of those of Canada or Argentine, will help fill the empty voids. It is certain, however, that the troubles have some cause, and it is Dr. Belbèze who calls upon his nation to seek for this and for the credit of France reestablish its country people and furnish to them the means of combating the ill that hangs over them.

CURRENT PERIODICAL COMMENT AND WORKING NOTES.

In addition to Contributions and Editorials, noteworthy from a public health standpoint, in periodicals quoted below for this month: *The Journal of the Royal Army Medical Corps.* (Volume XVII., No. 3, received) contains a special contribution by Captain W. R. G. Turrell, R.A.M.C., and Andrew Balfour, M.D.; "Granula Sledding in Trypanosma-Pallidum, and Associated Spirochetæ"; (Volume XVII., No. 4, received) "Inclusion in Cockroaches in India," by Captain P. S. Lidbus, R.A.M.C. *Physiologic Therapeutics* (September-October, 1911, received) "The Effects of Occupation on Health," by C. A. Lauffer, M.D. *North-Western Medical Journal* (Volume 5, No. 2, received) "Health Inspection as Applied to the Individual," by E. V. Oliver, M.D. *Journal of A.P.H.A.*, (New Series, Volume I, No. 6, received); "How to Get and Keep Competent Health Officers," by Geo. W. Goler, M.D., Health Officer of Rochester, N.Y. *Journal of the Outdoor Life*" (Volume viii., No. 10, received) "The Dynamic Principle of Nutrition," by John R. Murlin, Ph.D. *Public Health Reports* (Volume xxvi., No. 41, "Observations on the Viability of the Eggs of Uncinaria and of Ascaris in Fresh Allowed to Decompose in Water," by C. Wardell Stiles, Professor of Zoology, and H. McC. Miller, P.S., Assistant Hygienic Laboratory, U.S.A. Public Health and Marine Service; (Volume xxvi., No. 42) "Obligatory Notification of Tuberculosis," by Arnold Netter, translated by W. C. Rucker, Passed Assistant Surgeon, U.S.A. Public Health Marine Hospital Service. *Le Journal de Medecine et de Chirurgie* (Vie Année, No. 11) "La Tuberculose—Principales Indications dans le Traitement du Lupus Tuberculeux," par le Dr. Gustave Archambault, Assistant Dermatologiste à l'Hopital Notre-Dame, Dermatologiste de l'Institut Bruchési, Montreal.

Successful Medicine.

That bright little bi-monthly from Chicago, *Successful Medicine*, has the business side of a professional career as its keynote. Here are a number of pretty good reasons, contributed by Dr. J. E. Klotz, of Lanark, Ontario, to the current issue, why doctors are poorly remunerated:

1. Lack of good bookkeeping methods.
2. Lack of co-operation among one another.
3. Failure to impress the public of their obligations toward physicians.
4. Bills or accounts not sent out regularly.
5. Contra-accounts not promptly settled because the doctor fails to demand such statement.
6. Dead beats going from doctor to doctor and paying nobody; a fact which makes a black-list almost imperative and indispensable.
7. The importance of obtaining the full name, street address and occupation of their client before discussing his condition of disease.
8. Frequent failure to make early and close inquiries into financial standing of patients.
9. Laxity in making arrangements with patients regarding remuneration for medical or surgical professional services.

The Physician and Social Service.

There is no question, says *Dr. William A. Evans, editorially, in The Tribune*, but that physicians are giving less medicine than they formerly did. They stand ready to give even less when the patients are ready to take less medicine and keep their faith in what is being done for them. Every physician finds times when he would like to give his patient advice, direction, and counsel, and prescribe no medicine, but he weighs the situation carefully and concludes that the patient would be the loser by it. There is no question but that faith, crystallizing around a concrete act such as the taking of a dose of medicine, is more potent than faith more abstract. On the other hand, there is no question as to the power of medicines to accomplish results when the need is present. The wave of therapeutic nihilism which swept over the profession was directed not against medicine, but against the over-use, the non-discriminating use of medicine. There are those who have imagined that there was to be an end of all doctors as well as of all drugs. There is a field for faith in the treatment of disease, in the maintenance of wholesomeness of mind, in the prevention of discomfort, in the gaining of full efficiency. This field for faith exists alike among those who practice medicine and those who hold themselves out as healing by other means. But any man who relies alone upon faith is headed for trouble. The medical tree is like the railroad tree — it needs the lopping off of a limb here and there, but the trunk must stand or things will "go to pot."

In this iconoclastic age many medical traditions are going into the scrap heap. But the nation-wide demand for greater security against disease and greater physical efficiency is going to mean more work for the properly trained healers and preventers than there has ever been. The dominating public sentiment is behind the essentials of orthodoxy in religion, medicine, and business. The best judgment of the best trained men in each of these professions has always been, is now, and always will be accepted as the general rule of guidance by the dominating mass of the people. There is no more mysticism by which the speculation of untrained minds become safe guides in medicine than there is in banking.

But the public has a right to demand that physicians keep abreast of the growth in understanding of the social side of disease. Physicians must meet that demand.

They have the right to demand that physicians keep abreast of the discoveries in biology, bacteriology, and organic chemistry in their relations to medicine.

Physicians must meet that demand.

Effective Garbage Disposal.

Until lately practice on this continent in the matter of garbage disposal has not been a matter for pride. Two methods have been common; unsightly, malodorous piles of decomposing refuse have been — in some places still are! — allowed to accumulate in the vicinity of dwellings, or cheap, ineffectual "disposal plants" installed and operated by greedy or dishonest private contractors have been run for a few years and then allowed to lapse into well-earned oblivion. Neither procedure is creditable to a civilized state. There is really no need for a continuance of the

offensive and wasteful methods that have been commonly employed in this country, says *The Journal of the American Medical Association*.

At least two methods of garbage disposal have proved effective in cities: incineration and reduction. In the incinerating type all kinds of refuse, ashes, paper, rags, scraps of food, kitchen waste, etc., are fed together into crematories and burned. In European works of this type the heat generated by the combustion with a forced draft is a source of considerable revenue. One of the best examples of an incinerator plant on this side of the Atlantic is the Milwaukee incinerator, which has been in full operation since May, 1910. At the old Milwaukee plant the cost of disposal reached as high as $1.37 per ton of garbage, while the cost at the new plant is less than 50 cents per ton. If the excess supply of steam generated at the plant is economically utilized the actual cost will be further greatly reduced.

In garbage reduction works the sorted garbage is passed through various digestors, tanks and roller presses with a view to extracting the valuable portions, especially the fats and the nitrogenous matters. The Columbus, Ohio, plant, put in operation in July, 1910, is the first reduction plant in this country designed and constructed by a municipality. Successful financial operation of this plant appears in the fact that it netted $2,000 a month for the first six months.

The reasonable and business-like way of approaching the garbage disposal question is the employment of a reputable and competent engineer to examine local conditions and report on such topics as the most economical routes for collection and transportation, the establishment and location of one or more centres for disposal and the final method of treatment — incineration or reduction — best suited to the amount and nature of the refuse gathered. Small towns should beware of the man with patented machinery. In all cases the expert adviser is better than the quack.

Obligations of the Medical Profession.

Discussing the obligations of the medical profession, the *British Medical Journal* points out that "a very serious question to be considered in relation to the proposed medical service under the National Insurance Scheme, must be the definition of the conditions under which the medical men who agree to attend the insured persons will be called upon for their services. Unless some limitation is placed upon the power of the patient to requisition the attendance of the doctor when and where he pleases, the lot of the doctor will be intolerable, and the situation will prove to be a constant source of complaint and trouble." It does not appear to be generally known that medical practitioners in England admit no obligation to visit a sick person in response to a call, other than that imposed by ordinary considerations of human feeling; that is to say, the doctor is not legally bound to accept a call for his services should he desire to refuse them.

Smallpox and Vaccination.

As a result of twenty years' experience and investigation, Lieutenant-Colonel C. E. Woodruff, Medical Corps, U.S.A., has formed the following conclusions, as given in *The Military Surgeon*:

"(1) One good vaccination in infancy in three places on each arm as done in Europe, generally, but not always, causes a lifelong immunity in both vaccinia and smallpox.

"(2) In cases which can be re-vaccinated, or which take smallpox after one vaccination, the original operation as shown by the scars was not thorough as a rule.

"(3) There are no cases of smallpox on record after two undoubted vaccination successes, one in infancy and one in adult life, or even two in adult life at wide intervals. Many have been reported, but careful investigations failed to show scars of two different periods or showed poor ones. Even in those very few recorded cases where the physician himself has been convinced that the scars showed more than one perfect vaccination, we are now justified in doubting the accuracy of the observation or of the patient's previous history, as the cases are so few compared to the billions who have retained immunity. They are explainable as instances of

a long interval since one success. Until there are more accurate records of this interval we must accept the generalization that two successes protect for life. At least they do in the Army so far as twenty years of observation go. An exceedingly common mistake is to consider a vaccination successful when, in fact, it was a mere inflammation due to pus organisms always on or in the skin, and sometimes in the lymph. Another error is to consider "spurious" or "aborted" cases successful, where the vaccine organisms begin to grow but are too feeble to continue or, if potent, are killed by the immunity of a prior vaccination. All such cases must be called failures. They are much to blame for the false idea that vaccination does not protect. I can find no evidence that immunity wears out faster in the tropics than at home; the cases of smallpox here merely mean that we encounter infection more frequently, though, of course, a man otherwise wholly immune may be "run down" and more liable to any infection which he would resist if vigorous.

"(4) There are no persons immune to primary vaccination, and failure means dead lymph, improper application or removal of the live virus.

"(5) If an adult has two or more good normal scars from infancy, and a proper vaccination fails, he should be considered an immune, but in view of the few whose vaccinations were not thorough and whose immunity wears out, it is wise to repeat it until a second does succeed, but not oftener than every three years.

"(6) If an adult has good scars showing two successful vaccinations, one in infancy and one in adult life, or both in adult life, he should be considered an immune for life, and excused from further operation."

The Future of the Doctors.

In an article in the *Illinois Medical Journal*, Dr. Charles J. Whalen, formerly Health Commissioner of Chicago, calls upon physicians to unite in a campaign against the factors that threaten the doom of the medical profession. The average annual income of the doctor, he points out, is only about $700. Excessive competition, he says, has much to do with this state of things. The growth of "quackery" is another cause, and what he terms "abuse of medical charity" is another. Among the signs of the times noted by the Illinois doctor, however, perhaps the most boldly written is the tremendous advance in sanitation and hygiene. "The work of the physician," he declares, "will finally be eliminated by being absorbed as a function of the state." There might be a difference of opinion as to the advisability of obstructing the approach of that time when prophylaxis shall be perfect. Because his calling is one of the highest and noblest, because the lofty ethical standards to which he subscribes involve considerable self-sacrifice, it is hardly conceivable that the medical practitioner would thus bar the way to scientific progress, even though the very existence of the profession were menaced. In all times he has been a teacher as well as a healer, the learned man of every period. The Latin word, *docere*, from which our language gets the word doctor, means to teach. More and more it is becoming the doctor's privilege to teach prevention of disease. Shall he, in time, thus frustrate himself? Perhaps. We may doubt, however, whether that day is near at hand. The doctor by his growing skill is continually encroaching upon the grisly province of death. The feeble now live, though once they died, but they need the care of the physician throughout their lives. And, too, the conquering of infection ought to afford the medical profession opportunity to attack the hitherto unsolved puzzles such as cancer, and to afford them opportunity, not merely to keep people alive, but to eliminate the defects in general physical well-being. There will be, beyond a doubt, plenty to do, for generations of doctors yet unborn. If, in the cause of human advancement, it becomes the province of the state to keep everybody well and to punish the infraction of the law which results in bodily illness, perhaps the doctor will be an employe of the state. Either policemen will be doctors or doctors policemen. It matters little which. In the meantime the successful doctor is becoming every day more of a sanitarian and medical missionary and less of a peddler of drugs. He is entitled to increased respect as his pro-

sonal usefulness grows and his income diminishes.

Next Step Forward in Public Health.

What the duty of the workers in public health is to-day has recently been concisely expressed by Dr. Hibbert W. Hill in a paper in the *Minnesota Alumni Weekly*, in words that are worthy the widest circulation as an educational force. "We as a people," he writes, "have reached what we have reached handicapped by an enormous continuous expenditure of men, women and children and money, of diverted energies and wasted vitality, all on account of disease and the sequelæ of disease. What may we not achieve with this enormous deficit removed! The most conservative estimates place the actual money loss through infectious diseases alone (not counting the social diseases, summer diarrhœa and pneumonia) at eight billions per generation of Americans." Dr. Hill strongly urges the economy of the policy of large sums spent for prevention, towards which object many of the public statements of his last few years have been devoted. He shows how the task of the public hygienist is not how to learn to subdue infectious diseases, for that is pretty well determined now. It is no longer necessary to persuade the public that it would be a good thing to do, it is well aware of this already. What is necessary and important and the next step forward in public health education is to show the people that it can actually be done. "The only reason that public health has not more men and more money," he continues, "is that the people hardly believe us yet. They think disease is more or less inevitable. They still muddle medicine and mystery, drugs and the dispensations of Providence. They have yet to be shown. Once shown, the results will be accomplished and so easily as to make us stand aghast." Dr. Hill was the first graduate of medicine from the University of Toronto to receive its D. P. H. degree.

Infantile Paralysis Contagious.

The terror of infantile paralysis, which has swept through so many communities during the past two or three years, has been increased because we know so little about the disease to guide us either in its prevention or treatment.

There has been a general belief that the disease was contagious as well as infectious, and precautions have been taken in many ravaged communities along that line. Dr. Flexner, of the Rockefeller Institute, established its infectious character, and now two doctors of the Cornell Medical School have established its contagious character, have appeared to prove that it is propagated by dust from the room of a patient, and that the virus enters the system with this dust through the nose. Like other physicians, they suspected this from the course of the disease among children, but now they have approached the cause by injecting into monkeys a solution from sweepings taken from the rooms of sick children.

The experiments have lasted some two years, and the account of them is given to the profession through the *New York Medical Journal*. They establish prophylactic measures in the care of children stricken with the malady, and hold out some hope of a reduction in its sweep when such precautions become general.

The Content of the Breath.

Whether the human breath is really poisonous is a question often discussed, and it has been reconsidered recently in a paper by Dr. Milton J. Rosenau in the *Journal of Medical Research*. Dr. Rosenau finds that the outbreathings of individuals do contain organic matter, and this question of organic matter is one that needs to be investigated in its relations to the health of other men who have occasion to or are obliged to rebreathe the air. Dr. Rosenau's collaborator in the work, which was undertaken at the Harvard Medical School, is Dr. Harold L. Amoss. The ground is one which has been traversed many times as some new method permitted of more delicate measurements, and till the recent experiments the balance of evidence was against there being any organic matter in the breath. Dr. Rosenau has been able to turn to account a more delicate means of determination, in the form of anaphylaxis. This interesting physiological effect has been discussed many times, and here it will be necessary only to say, that man or other animals when treated with certain substances become after a while abnormally sensitive to that kind of

treatment, and a second use of the treatment will produce symptoms in the animals or man that may be detected by the specialist. Anaphylactic reactions in the experiments of Rosenau and Anues demonstrate the presence of this organic matter, which has hitherto eluded the most delicate chemical tests.

Claude Bernard in 1857, supposed animals to be affected by carbonic acid which deprived them of oxygen, and for a time there were many supporting authorities. In 1860-61, Richardson noted the effect of temperature on the health of creatures confined in unmoving air, and Pettenkoffer in 1863 believed that the symptoms observed in crowded and unventilated places were not due to excess of carbonic acid nor decrease in oxygen. This observer did not acknowledge that the impure air of dwellings was directly capable of originating infectious diseases, or that it was really a poison in the usual sense of the word, but that it reduced the resistance of those continually breathing the impure air.

Brown-Sequard believed in poisonous matters in the breath while other authorities, Billings, Mitchell and others, denied their presence, repeating with negative results the former's experiments. The effects of breathing air contaminated with the expired breath have recently been generally assumed to be due to the effect of increased temperature and moisture rather than to the poisons of the breath. Such an opinion was strengthened by the experiments of Benedict, who in his tests has kept persons in his calorimeter for twenty-four hours, breathing and rebreathing the same air, with a carbon dioxide content as high as two per cent. The only precaution was to keep the temperature down and remove the moisture, and no discomfort was felt. Dr. Rosenau puts his finger on what seems to be the neglect of a very important factor in the calorimeter experiments, when he says: "It is to be noted that in these experiments some of the air was passed over lime and sulphuric acid every two hours, and the greater part of the moisture was removed by condensation, which may also remove other substances than the carbonic acid and moisture."

Dr. Rosenau sets forth also the position of bacteriology in the matter of the breath. One of the notable achievements of the science was to show that the outbreathed air is sterile, the mucous membranes acting as a trap for the organisms. This fact has been urged to its full limit and instead of the belief in the dangers of communicable disease through the breath, "it was entirely acquitted and given a free bill of health in the minds of many sanitarians." Here there has been a reaction, and droplet infection, through Flugge's experiments, partly restored the breath to a position of danger. This position has again been assailed by Winslow, whose experiments show a limited time of danger from droplets and only in the immediate neighborhood of the invalid. Winslow's position, the latest that has been taken in this work, is that the droplets quickly settle to the ground and the person coming into the room half an hour after a sick person has left it runs practically no risk of infection. This view is quite in contrast with the older one, of air-borne infection, based on the assumption that the air is filled with dangerous bacteria.

Air-borne disease — save for two or three highly infectious diseases — is not now the belief of most of the authorities in medicine and heretofore no harmful substances of a chemical nature being demonstrated, the agency of the air has been recently considered as negligible. Some sanitarians have gone so far as to state that if the temperature and moisture can be kept down and the air stirred continuously, as it would be by an electric fan, it may be rebreathed. This claim, would it be substantiated, would have enormous influence in factory and workshop ventilation, for all the legislation is based on a continuous supply of fresh air to the rooms. If the supply could be dispensed with, commercial interests would soon demand a narrowing of the quarters in which the work is done. Dr. Rosenau is not willing to go these lengths, "for," he writes, "we have always felt that a vitiated air must contain substances which are harmful, even though not demonstrable to science."

The greater portion of the paper is devoted to the technicalities, methods of condensing the breath and the details of the reactions. A protein substance was demonstrated, which for the present the investigators assume to come from the blood. The logical conclusion is that protein substances under certain circumstances must

be volatile, not in the sense that they can pass out into the air in gaseous form, but rather in some of the curious forms of colloidal suspension.

The fact that organic matter is present in the expired breath does not carry with it the right to state that they are poisonous; that must be the subject of other investigations. "It is evident," according to the statement, "that the air does contain many substances which we cannot at present discern, some of which may have an important bearing on health." It is well known that the deaths following an injection of diphtheria antitoxin, which are rare, occur in adults. How they have become sensitized has always been a mystery. It is possible that sensitive persons may absorb through the lungs enough horse protein to prevent anaphylactic reactions on inoculation. This opens up a new field for investigation, which may throw light on other important infections of the day, as to the content of the expired breath of horses and other domestic animals.

Slaves of Machines.

Sophronisba P. Breckinridge and Edith Abbott, of the Chicago School of Civics and Philanthropy, made an exhaustive examination of housing conditions in a district in the 8th ward of that city, and their report is published in the *American Journal of Sociology*, issued by the University of Chicago Press. It was prepared as the result of a house to house canvass made by a dozen research students of the Russell Sage Foundation:

"One cannot walk these streets without a vivid impression of the fulfilment of an old prophecy that here men are slaves of machines, and that machinery has ceased to be the servant of its makers," say the writers. "The stranger within the gates of South Chicago is overwhelmed with the fact that the world is made for industry, not for men and women and little children; that with magnificent enterprise on the one hand there is a hideous waste of human life on the other. The men who feed the furnaces and send the product of their infamous labor to a world market, sleep in these miserably overcrowded houses; they have no decent places for recreation and frequent the low saloons and dives along the strand; there are no decent lodging houses for the unmarried men or the newly arrived immigrants who have come out alone, hoping to earn the passage money for their wives and children when they have found a job.

"No work is too hard for them, no conditions of living are too sordid if they spell the promised reward. With no lodging houses provided they crowd into the small homes of their fellow countrymen and innocently become a demoralizing influence in the family life."

The authors declare the community is not doing its part to improve conditions, because the housing code is inadequate and because it has failed to provide the department of health with a staff of inspectors sufficient for the enforcement of present legislation. They say:

"It is important to call attention to the fact that neither in the stock yards district nor in South Chicago can the housing problem be solved until those responsible for the great industries upon which the men depend for employment and which, in turn, depend on the men for existence, realize the necessity for so altering industrial conditions that decent standards of family life may be maintained. It is fair neither to the workers nor to the community that a great and powerful industry should be allowed to blight the neighborhood at its gates."

The investigators canvassed a district of six blocks known as "the Bush," with a total population of 3,094. The nationalities represented in the population are German, Hungarian, Irish, Magyar, Polish Slavic and Swedish. The laws governing the size of sleeping apartments were found to be frequently violated. Overcrowding was found to be worse than in any other district in Chicago. Many of the laborers slept in the same rooms with the owner of the house and his wife. Often the rooms were used both night and day. The investigators found much filth where animals were kept, these pets being lodged in the most inconceivable places. Ducks, chickens and pigs were discovered in basements. One family kept four geese in a bedroom, and another seven goats in the basement. Attics also were found to shelter all sorts of feathered animals.

The Almanac Idea for Boards of Health.

"October for scarlet fever," is the striking caption in the *Health Almanac*, of the

Virginia State Board which in this interesting publication is circulating reliable facts with reference to the prevailing ailments, each in the season in which it rages. The relating of health to the almanac is no new idea, for those who were not brought up on the Old Farmer's had some substitute in the house usually issued in the interests of a patent remedy, but the presentation of plain facts at the time when they are likely to be of service is new when put in such attractive guise as in this Virginia almanac. It follows out the old ideas in having a calendar indicating the day of the month, the moon's phases, the times of rising and setting of sun and moon, and in the column where one usually finds the hieroglyphics and the legends, "About this time take Faker's Family Freshener," there are the settings forth of important events in the medical world, the birthday of Virchow, the opening of an important hospital with an international record, or the issuing of some world-reversing doctrine, as when on October 1, 1859, Darwin finished his proof of the origin of species. Health facts in such attractive guise as the Virginia Health Almanac ought to continue for years to be a factor in public health education.

Instruction in Sex Responsibility.

In his usual fearless manner, Dr. Neff, Director of the Philadelphia Department of Public Health and Charities, has come out squarely in favor of having parents instruct their children in the responsibilities of life as regards the matter of sex. In the *Bulletin of the Philadelphia Department of Public Health* recently issued he directs attention to a course of training which would begin with natural history, botany and, as the child grows older, include elementary zoology. By the aid of these, parents could undoubtedly unfold gradually and naturally to the child's mind the things which it seems essential it should know, but which it is extremely difficult to impart without their help. It is a fact, as the Director states, that too often parents hold to the old custom that such teaching is improper until it is too late. Withholding it is often the cause of "sorrow, disease and disaster."

Insufficiency of the Health Appropriations.

The *Bulletin of the Health Department of the City of Chicago* presents always on its last page some item, pictorial or statistical, that touches a vital spot. Sometimes it is the milkpail in the dirty farm barn, and at another it may be the baby's milk in the conventional baby's bottle. A current issue touches upon a matter to which too little of the public attention and the public consideration are given, the appropriations of the municipality for the public health department. The figures are presented in the Bulletin for the health, police and fire departments of Chicago for four years. For the health department in the four years, 1907-10, the appropriations were, respectively, $850,000, $600,000, $600,000, and $545,000. In the same years the appropriations for police were $5,600,000, $6,630,000, $5,540,000, and $5,900,000, while for fire they were $3,200,000, $3,200,000, $2,900,000, and $3,000,000. Health receives in Chicago only one-tenth as much public financial support as the police, and one-sixth as much as fire.

Such figures as this show how little people value the measures that are protective of health in comparison with those relating to property, for the police functions must in the finality range themselves quite largely under the protection of property. There is need in this country of a standardization, which can be done properly only at considerable cost, of the expenditures for health work in the municipalities. The problem approaches in complexity the ratings of the efficiency of colleges that the Carnegie investigators have taken up so actively and persistently. Here is a crying need for some good institution, wishing to confer lasting benefit on the country's most important asset, to lay a foundation for rational improvement in health administration by establishing proper standards.

Diagnosis and the Public.

Commenting on the difficulty which even the experienced doctor may have in settling the nature of an illness, the *London Lancet* makes the following striking statement: "The public fail to recognize that in many cases the making of a diagnosis is extremely difficult, and not rarely quite impossible; and they are ready to look upon any refusal to name the disease present as an acknowledgement of ignorance, while it may well be that the refusal is due to the wide knowledge of the observer."

Open Mail

To the Editor, The Public Health Journal, State Medicine and Sanitary Review:

The Woman Health Inspector.

SIR:—The woman health inspector ought to be, and probably soon will be, a permanent institution in every city. She has been tried and proved in New York. Wonderful have been the improvements since she began to delve with her practised hand into the conditions that make for the spreading of disease in the poorer sections of a city.

In order to write intelligently about the work that these Health Board women are doing, the writer recently obtained permission from the New York City Department of Health to accompany one of them on her rounds. If an aspirant for a position on the health squad is curious to know the requirements, I would say: Tact in dealing with women of the slum world; nerves, olfactory and every other kind, of the insensible variety; an athletic physique and an absolute craze for prying into corners and investigating quarters that harbor human beings who regard filth and foul air as necessary evils. It will be readily seen how essential all the requirements referred to are when the story of one day with the health officer is told.

"First of all," said the brisk little woman of the Health Department, as we stopped before a huge, overgrown tenement house, "first of all, the fire escape. Most of the people of the tenement house type regard a fire escape as a kindly provision by a not over-generous landlord for enabling the occupant of scant quarters to find storage room for anything that can be dispensed with for the time being in the room itself. The fire escape is used as a clothesline, as a bedding receptacle, as a pantry, a sleeping-place in warm weather and a lounging-place in the day time. Now, I want to get out on this fire escape, in order to reach the roof, but on the way I shall have to have a heart-to-heart talk with the woman of the rooms, who, you can see from the street, has made it quite impossible for anyone to reach safety in the event of fire, by piling the escape with all sorts of domestic flotsam."

The question of tact became prominent as soon as the rooms of the tenant referred to were reached. She proved a tartar. Nothing but the threat of a policeman would bring her to reason. Once her tirade of abuse was stilled, however, the day was ours. It was found that most of the windows of the place were hermetically sealed, apparently because some previous tenant had left them that way and the present occupant had been content to leave things as she found them. A simple lecture on the benefit of airing a room did less good than the action of the woman health officer in mounting a chair and unsealing the windows, while the tenant looked on stoically, neither indorsing nor objecting to the admission of fresh air into the fetid room. At the end of the session, however, the tenant had been reduced to that state of submissiveness popularly referred to as "eating out of your hand." We had no trouble when it came to clearing the cluttered fire escape and making our way to higher regions.

"Besides seeing that the fire escapes are kept clear and free from the refuse that these people pile on them," said the Health Board inspector, "it is my duty to observe the condition of the escape itself. Grasping landlords will try to evade the law by putting up a fire escape that is smaller than the legal requirements. I carry a foot rule, and measure them as I go up. It would be a calamity, wouldn't it, if, when a fire occurred, one of these many stout women became wedged in a narrow fire escape, cutting off the pathway to the street for the other tenants? Not only must the fire escapes be kept clear, but they must be of the right size. We have to report any that are in wrong shape.

"Now we get to the roof. You see, it would not do for a delicate person to tackle a job like this. Any woman ought to be able to climb a fire escape, however, with a little practice. Up to the roof we

big tank provides water for all the young army of tenants in this rookery. How often do you think it would be cleaned out if the health officer did not come along and insist upon it? I must climb that ladder and get my inquisitive optics focused on the interior of the tank."

"Horrors!" ejaculates the health board expert. "I never saw a tank in a worse condition. I don't believe it has been cleaned since it was put up, and dear knows how long ago that was. It takes a woman to find out such things as these. The wonder is that every one in the tenement has not been added to the typhoid death list long ago. You may rest assured that the owner of this building will get a prodding that he won't forget in a long while.

"Well, now that we are on the roof, we may as well climb to the roof of the adjoining building and make our way to the street down that fire escape."

Another water tank was scrutinized by the keen eyed Health Board woman, and a note made to give another landlord a dressing down for not providing a clean receptacle for the tenants' supply of water.

On the way down three sets of rooms were visited and a tactful talk handed to the occupants on the need of studying simple hygiene. It became more and more apparent, as the day wore on, that a woman alone could be intrusted with work of this kind. A man would not only have been out of place — he would have been quite unable to accomplish what the woman did. She was in her proper sphere, the home. Nothing could be more eminently proper than the selection of a woman for such work.

"We're now going down to the quarter that gives us more trouble than any other part of the town, the streets where rags and bones are sorted."

The health officer led the way to a littered street, where every evil smell seemed to have been caught and kept ready to attack the visitor. Rags and scraps of every kind provided an unwholesome carpet for the untidy street. Disease lurked in every hole and corner.

"We do the best we can," said the health officer, a little wearily, "but it is impossible to teach these people to be tidy. We make them clean up every time we come around, but if we didn't come we know well they would lapse into the old condition of dirt and litter. Here you," this to a slatternly looking woman who was sorting rags, "get busy and rake that rubbish into a heap. Don't let it get spread all over the street in that fashion again or I will put the policeman — the cop— on to you. Where's the man who runs this place? Get that rubbish out of here before something gets you."

So the day wore on. The health officer's heart was clearly in her work. And she was doing a great work, conscientiously and consistently cleaning up and trying to keep clean a part of the town that fairly revelled in filth. To the writer the only weak feature of the plan was the lack of women to carry it out. Instead of a few women health inspectors there should be hundreds. And they should be part of the municipal machinery of every city.

C. B.

Meetings and Reports

Material for this department to appear in any month should be transmitted before the 25th of the preceding month.—Ed.

DOMESTIC

ADVANCE NOTICES.

Canadian Public Health Association Congress, under the patronage of Field Marshall, His Royal Highness, the Governor-General, December 13th, 14th, and 15th, 1911, Royal Victoria College, Montreal. F. C. Douglas, M.D., Secretary of Committee for Local Arrangements, 20 Park Avenue.

The Eleventh Annual Report of the Canadian Association for the Prevention of Tuberculosis.

From every point of view the Eleventh Annual Report of the Canadian Association for the Prevention of Tuberculosis is the best which this Association has yet issued. Both the President, Professor J. George Adami, and the Secretary, Dr. Geo. D. Porter, are to be congratulated on its amplitude and excellence.

The essence of the Report is that the work which the Association is organized to do is being aggressively and successfully done. During the year much highly useful educative and organization work has been accomplished — the fruits of which will show in the records of the future. The task of arousing national interest and action in the subject of the prevention of tuberculosis is a very great one, and the wonder is that so much has been already accomplished.

The report shows in detail just what work is being undertaken in every province, and contains a number of papers on a wide variety of subjects connected with the anti-tuberculosis movement by those well competent to deal with these subjects. Among these papers are the following:

Dr. Adami's Presidential Address at the Convention held in London in May; "Sanitorium Treatment," by Dr. C. D. Parfitt; "Prevention and Treatment of Tuberculosis in Rural Municipalities," Dr. Wm. C. White; "The Present Outlook in the Campaign Against Tuberculosis," Dr. Livingston Farrand; "Woman's Work Against Tuberculosis," Mrs. P. D. Crerar; "Tuberculosis in Children," Dr. J. H. Holbrook; "The Clinic for Pulmonary Tuberculosis," Dr. Harold Parsons; "Municipal Sanitoria," Dr. J. W. S. McCullough; and "The Relation of Bovine Tuberculosis to Public Health," by Dr. Shrader.

The incorporation of illustrations in this report adds much to its interest and value.

From the foregoing it will be seen that the Eleventh Annual Report is not only comprehensive; but is made a valuable addition to the literature on the subject with which it is concerned.

The Medical Side of Dalhousie University.

The educationalists who brought about the combination of the Halifax Medical College and Dalhousie University, following suggestions of the Carnegie Commission, are to be congratulated, tending, as this union does, towards the requisite financial strength and concentration of educational efficiency necessary to and more in harmony with that high standard of citizenship always identified with maritime provinces of eastern Canada. Dalhousie University reports that in accordance with an agreement between the Governors of the University and the Corporation of the Halifax Medical College, the work of the latter institution has been discontinued and instruction in all subjects of the medical curriculum will henceforth be given at the University.

Toronto Professional Harmony and Hospital Requirements.

In Dr. N. A. Powell's recent presidential address before the Toronto Academy

of Medicine, it was pointed out that the evolution of the Academy from four societies, by the union of which it came into existence, was in line with medical progress the world over. "In all great centres of civilized population," said Dr. Powell, "the day of the small medical society, of the proprietary medical school, and of the ill-equipped hospital is passing or has already passed.

"Modern life, with its complexity of needs, has made it imperative that bigger and better organizations should replace those which formerly sufficed. Yet to be bigger is not of necessity to be better; and while in the changes that are taking place much has been gained, some things of value have possibly been lost.

"A few years ago the four medical societies referred to were doing excellent work in Toronto and making the name of the city and country widely known. They voluntarily gave up their autonomy in order that by uniting forces, one strong and progressive society should come into existence. Medical men have thus been brought into closer relationship, one with another, and warm friendships are replacing jealousies and suspicions which formerly were too much in evidence."

Referring to hospitals, and later to student requirements, Dr. Powell said that in the year 1898 it fell to his lot to suggest a way in which a certain ample fortune could be used for the permanent benefit of the people. What was decided upon involved substantial gifts in aid of the care of sick children, of the treatment of pulmonary tuberculosis, of missionary efforts, and of various other great charities, but reserved for a single purpose the bulk of what was to be devised. This purpose was to build, equip and maintain in perpetuity an emergency or casualty hospital, which should afford prompt and skilled relief to those injured or taken suddenly ill.

That a need exists for such assistance in all large cities admitted of no question. When supplied by the regular service of a general hospital it was apt to be attended by delays, and to disarrange the work of the staff. The Relief Station at Haymarket Square, connected with the Boston City Hospital, and the Hudson Street Hospital, which is the Casualty Department of the New York Hospital, were the best institutions of the kind to which he can refer. Each has a staff of its own and the patients admitted are soon transferred to the parent hospital. In Scotland a similar plan is found to be most satisfactory. In every great modern hospital a department like this must be given a place. On this continent, he wished it remembered, there is no great modern hospital complete in every detail. Years must elapse before anything approaching the Rudolph Virchow Hospital or two or three others in Europe could become available.

If the dreams of the architects are realized, however, Blackwell's Island will have one and Cincinnati another.

If asked to name one particular in which the men who are graduated in medicine with us most seriously fall short, he would answer at once: "In the practical aspects of their surgical training."

He was glad, therefore, to tell the members of the Academy that, after consultation, those in authority had thought it best to approve of a large clinic room in the aforesaid Emergency Hospital being set apart for surgical demonstrations and fitted up with a lantern and whatever else may be found of advantage to surgical instruction.

Union of Canadian Municipalities and the Twentieth Century City.

The Hon. Henry B. F. Macfarland, former president of Commissioners of the District of Columbia, U. S. A., before the recent 11th annual convention of the Union of Canadian Municipalities at Quebec, spoke on the Twentieth Century City in substance as follows:

The true twentieth century city is one which is conscious of its duties and opportunities as the present heir of all the ages and is striving to meet them fully.

A city, like a man, is body, mind and spirit. It is more than the individual citizens, for it lives on and is not only a legal, but an actual entity, separate from them. Even up to the nineteenth century, there was little community consciousness, and generally the citizens thought of their city simply as a place in which to make money and spend it. City patriotism was almost unknown; hence in the United States the general failure of municipal government; hence the terrible indictment of one of the greatest of our cities as "corrupt and contented." On both sides of

that invisible line between the Dominion and the Republic, we were too busy in that period of construction to think fully of what we were doing, to see far ahead or to look much below the surface. But late in the last century, noble men and women appeared in different cities who began to see what their particular city ought to be, and then to try to make other people see the vision too.

Naturally when we were first wakened up by our more progressive citizens, we first thought of the body of the city. The "city beautiful" became the natural object of those who suddenly opened their eyes to see that they lived in smoke, amid ugly and incongruous buildings with unattractive highways, often poor and almost always inadequate, and without suitable parks, park space, trees and other aesthetic essentials.

But as no thinking being can be contented simply with physical development, our cities have now also a noble discontent with the improvement of their mind. The educational system, including public schools of all kinds up to, and including city colleges, the public libraries and museums, and public play grounds, all the forms of public education, show the evidence of this new feeling. Public play grounds, indeed, have been practically created in the past decade. They have not entirely passed the stage of ridicule by the ignorant, including persons of general intelligence and education, of whom many oppose every step forward. The need for them had to be shown first by public spirited citizens who provided them until the municipality took them up officially, as was the case with the kindergarten and other modern improvements in public education. But now they are on municipal programs and budgets, and millions have been spent upon them already, often by vote of enormous majorities of the taxpayers, which show their popularity. Public schools and public libraries which we admired for their buildings, equipment and training in the nineteenth century, would not content us in the twentieth century. Changes in the curriculum of our schools have been rapid and radical and the end is not yet even.

As in the man, so in the city, the spirit is the most important. As a city thinketh in its heart so is it. Its spirit determines its life.

This is the warrant for the new optimism or meliorism of cities. We are sure of making everything better; so that the new word is "the city better" rather than the "city beautiful," unless we comprehend all under "the beauty of holiness" that is of wholeness, of health, of perfection in all things.

This means that all the city's work shall be done by citizens and officials not only without graft, but with efficiency under a comprehensive plan of harmonious development through a long period, a wider city planning. This requires better fiscal provisions, more equitable and rational tax laws, more clear and comprehensive budgets, uniform municipal accounting according to cost keeping and other modern methods, and expenditures according to true economy, not parsimony and not extravagance. It requires also proper management of public utilities and proper regulation of public service corporations.

The ideal twentieth century city with a pure water supply, pure milk supply, pure food supply; without slums or dangerous congestion; without insanitary or inflammable buildings; with general knowledge and general practice of health rules; with righteous and enforced laws as to labor, especially that of women and children; above all with the social justice of true democracy, will have smaller and smaller delinquent, defective and dependent classes and a higher order of citizenship.

As practical men, we know even though the "stay-on-the-farm" and "back-to-the-farm" movements are having encouraging success, thanks to improved means of communication and as well to scientific training and better facilities for farming, that the entirely modern growth of the city in unparalleled proportions must continue under the operation of economic laws which cannot be repealed by the legislature. More and more people will live in cities where the majority now live. We must accept the conditions and make the best of them. This can only be done through the spirit of the city. Its intelligence must be developed and educated, its conscience must be quickened, its will power must be strengthened by exercise. Experience has already shown that there is nothing impracticable in such a vision.

For the Health of Vancouver.

A special report was submitted to the Vancouver, B.C., health committee recently by Medical Health Officer Underhill. The clauses adopted provide: assistant, at a salary of $2,000 per year, to take entire charge of the department of infectious diseases; that a joint meeting be held between the city engineer, the chief of police, and the medical health officer, to discuss the overlapping that now occurs in portions of their respective duties, and that the joint committee report to the city council as to how this overlapping can best be obviated; that an additional rooming house and lodging houses inspector be appointed, whose duties, in addition to assisting in inspection, would be to find rooming and lodging houses which have not yet applied for a license. The recommendation says: "It is possible that this work could be carried on by the police, and this is one of the reasons why I suggest a joint meeting of the chief of police, the city engineer and myself."

Several of Dr. Underhill's recommendations were laid over, however, for future consideration. Among them were: that an assistant be appointed, to have complete charge, under the supervision of the medical health officer, of all sanitary matters; that consideration be given to the advisability of placing the health department in the hands of an elective commission, composed, for example of three laymen and one or two medical men (*a la* San Francisco.)

Dr. Underhill finished his report with an emphatic statement that if his department is to carry out its work in an efficient and consistent manner, it is necessary that adequate accommodation be provided.

He called attention to the complexity of the by-laws, which acts as a great handicap, and instanced the example of a manure box in an alley. One by-law declared it a nuisance under the control of the health department; another that it was a lane obstruction, which should be removed by the board of works; while under another by-law it was placed under the supervision of the scavenging department, which is part of the city engineer's department. The result is that the department receiving the complaint will usually refer it to the police department, which, in turn, will send it back to some other department. Dr. Underhill complained that the health department is responsible for all such nuisances, but has no power to take action.

Vancouver has decided, however, to erect an Isolation Hospital to cost $50,000, and is now asking for tenders.

Montreal Architectural Lectures.

The following is the list of lectures arranged by the Province of Quebec Association of Architects to be given at 5 Beaver Hall Square, Montreal, during the winter season: Tuesday, November 21, "Modern Methods in Foundation Work," by Mr. Alexander Allaire, M.E.; December 19th, "Ventilation of Public Buildings," Dr. T. A. Starkey, Professor of Hygiene, McGill University, and President, 1910-1911, Canadian Public Health Association; January 16, 1912, "Improvements to Traffic Routes in Montreal," Mr. F. G. Todd; February 20, "Mouldings," Prof. P. E. Nobbs, A.R.I.B.A.; March 19, "French Apartment Houses," Prof. Jules Puivert, of the Polytechnic School; April 16, "Colonial Architecture, Prof. T. W. Ludlow, of McGill University.

London (Ontario) and the Public Towel.

Dr. T. V. Hutchinson, will encorporate in his forthcoming report a recommendation that the London Board of Health request the council to take steps against the public roller towel.

Factories, offices and even schools harbor the roller towel, and it is likely that London will follow in the footsteps of Chicago in prohibition measures.

Night Refuges in Montreal.

The question of night refuges is at present occupying the attention of Montreal civic authorities, who are making a thorough inspection of the places run by individuals. Conditions in those run under the auspices of certain societies, as well as the one bonused by the city, are found favorable, but a number which cater to the foreign element reveal deplorable conditions. Without light, ventilation or sanitation, many of these places are a menace to the health of the city.

It is believed that it will eventually be necessary to establish municipal refuges

for Montreal's homeless, in order to weed out the undesirable places where unhygienic conditions prevail.

Manitoba Architects and the Health Act.

Several questions of interest and importance to architects and the public at large were discussed at a meeting of the Manitoba Association of Architects at last month's meeting.

One of the most important questions discussed was with reference to the new provisions of the Manitoba Health Act, passed at the last session of the Legislature. Some of the new provisions of the Act which affected the building by-laws of the city of Winnipeg were found to be impracticable, and a committee from the association was appointed to interview the Government. The committee reported that the Ministers had agreed that some amendments to the Act would be accepted, and the same committee was asked to prepare a synopsis of the suggested alterations to the Act which the Government will introduce at the next session. The committee will report back to the next meeting of the association.

Lectures on Town Planning at Toronto.

The University of Toronto is taking the lead in Canada by inaugurating a course of lectures on Civic Art and Town Planning and has secured the services of Mr. Thomas H. Mawson, H.A.R.I.B.A., lecturer at the University of Liverpool. Mr. Mawson stands high in the new study of civic planning, having been appointed to design the grounds of the Peace Palace at Brussels, and is the author of important works on cities and gardens; and the University of Toronto has done wisely in securing so eminent an expert to lead in the study of this important subject. The course of lectures begins the first week of the present month.

Fort William's Health Officer on the Duty of the Housewife.

We are in receipt of a paper read by Dr. H. F. Wodehouse, before the Woman's Institute in Fort William recently, on "The Duty of the Housewife to the Cause of Public Health." The speaker, in introducing his subject, spoke of his work for the advancement of public health as extremely interesting, and having gratifying results, but also its drawbacks. Frequently these were in the form of obstacles interposed by the public, whose opinions are formed without knowledge of all the facts. Having this lack of knowledge of the facts in mind, he endeavored in his humble capacity to follow the maxim of the Earl of Derby: "Sanitary instruction is even more important than sanitary legislation;" and to impart to others at every opportunity the facts, as public health men know them to-day.

Continuing Dr. Wodehouse said: "What is the meaning of the words Public Health? Public Health is concerned in that portion of the unwell feeling in the individual, chargeable to some controllable cause. It is evident from this definition that the cause of public health is a wide subject as well as one whose component parts are open to question and which still lacks many parts which should be included under its guardianship. For the purpose of this address we shall arbitrarily limit our discussions to those diseases commonly known by the public to be under the ban of all health departments — namely, smallpox, chicken pox, measles, whooping cough, mumps, scarlet fever, diphtheria, tuberculosis, typhoid, plague, malaria, yellow fever, cerebro-spinal meningitis, and infantile paralysis.

"What is the nature of these diseases? They are all known to be communicable from one person to another, but frequently from the infected person to another by some intermediate hosts. This hosts may be clothing or personal belongings, earth, excreta, or a living person into whose system the disease does not gain an entrance, or a person into whose system the germs gain an entrance but are unable to produce typical symptoms, or so very mildly that they are mainly indiscernable. All these diseases are supposed to be communicable owing to a germ causation, but many of them have not had their individual germ isolated.

What has been the prevailing idea of their cause and spread? Fifty years ago infectious diseases were said to be found only where filth existed, either due to nature — as swamps, low lying, poorly drained tracts, or due to men — unsanitary habits. These ideas were formed from the histories of epidemics, malaria and yellow

fever being prevalent near swamps; typhoid, plague and other diseases occurring in unsanitary cities; diphtheria and tuberculosis in homes where stagnant sewer gas and other foul air existed.

What has been proven to be the nature of their cause and spread? Malaria and yellow fever have been found to be due to infection by germs, and these early forms of life exist in the mosquito and get into the blood stream of man through the bite of this insect. Plague is caused by a known germ which also infects rats and ground squirrels and multiplies in these animals and may thus travel from place to place, infecting man indirectly through food or otherwise.

Typhoid fever is caused by a germ which has no intermediate hosts in lower animals or insects as the above mentioned have, but is known to live for some time in water, ice, earth, milk and other foods, and may live for many months in people who have had typhoid and who have recovered from its symptoms, or in people who have had typhoid infection but in whom the symptoms did not develop or were so mild as to be unnoticed. These persons give off — not always continuously — germs by way of feces and urine. Their hands and clothes are thus infected and the food of other persons in this way contaminated.

Tuberculosis in the human form has no intermediate hosts, but the tubercular germ infecting cows can and does live in man and cause tubercular disease. This disputable point has been settled once and for all time by the final report of the Royal Commission on tuberculosis.

Human sputum from tuberculous people is almost constantly infectious, and these germs live on clothes, in dust and elsewhere for variable periods.

Spinal meningitis and infantile paralysis have both been traced to a known and constant infecting bacillus, but its mode of propagation and dissemination has not been definitely determined.

The other diseases mentioned, are undoubtedly of germ origin, but the germs have not been finally decided upon, therefore our means of combat is simply isolation for definite periods.

How does this concern the housewife? In the first place, it is becoming the view of many public health men that most of the germs causing specific diseases do not live long outside the human body or the living intermediary hosts referred to. In fact, 97 to 99 per cent. of the germs this discussion is concerned about die within 24 hours to a week from the time they are discharged. Even typhoid epidemics from water infection are very sharp and usually short in their duration unless there is a constant pollution of the water by fresh fecal contamination. Infected wells are slower to purify themselves than city supplies, but even these are non-injurious if their source of infection is cut off. It is almost a certainty that nearly all infection is spread by carriers of one form or another. Even the germs that live outside of the body of their host, practically do not multiply except in milk, and very slightly there if milk be kept under 50 degrees Fahr.

The principal carriers we know of are the mosquito, the rat and squirrel, and man. The method of combating the mosquito is drainage of all bogs and low lands, the spreading of oil over stagnant waters, and the complete screening of houses and places of habitation. Panama Canal zone is now an excellent example.

The rat and squirrel must be combatted by governments and municipalities.

The last named carrier, man, is largely entrusted to the careful housewife.

Carriers of smallpox, chicken pox, measles, whooping cough, mumps, scarlet fever and diphtheria are:

First, those who have not entirely become clean or recovered from illness before they are allowed to mix with other people of their own or other households.

Second, those who have in their system the germs causing the above mentioned diseases, but in whom no symptoms have been produced;

Third, those who have in their system the germs causing the above mentioned diseases, but in whom the symptoms have been so light as not to have been recognized, or if recognized, for various reasons have not been treated as infections.

Under No. 1, the housewife should feel it her duty to the other members of the household and the outside general public to make sure the case is entirely better, and where possible insist upon a thorough personal examination by a physician to as-

certain that the body is no longer giving off infective matter.

Under No. 2, the housewife is handicapped, but, in case of typhoid, should insist upon three examinations of feces and urine by the Board of Health laboratory on three different days. She should inquire into the history of maids, waiters, cooks and other help who handle foods, to see whether they have had typhoid, and, if so, insist upon a similar examination of excreta. This may seem rather far fetched, but it is preferable to an outbreak such as that which occurred at Hymers.

And No. 3 could be met by each housewife refusing to shield or conceal scarlatina, chicken pox or mild forms of any infectious disease.

See, therefore, that the health officer is notified of each possible case or suspect. If in doubt, throw the responsibility on him. By removing such mild case or suspect to the hospital at once, you prevent probably two other cases in the house which might be much more severe and perhaps fatal.

Every time you conceal a case of infectious disease, you do yourself a wilful wrong as well as your family and the general public. It is the unknown cases of infection which cause epidemics, not the severe cases which are reported and quarantined.

As to tuberculosis — knowledge of the infected sputum and longevity of its germs outside the living host suggest extreme care in destroying sputum at all times, as excreted from patients and absolute cleanliness in surroundings of patients. Knowledge of the facts, from the Royal Commission's report referred to, emphasize the importance of tuberculin testing of all milk cows, and the personal interest parents should show in choosing a supply of cow's milk for their artificially fed infants. Don't sit back and feel assured the Board of Health has protected your supply. If from a private source, inspect the animal and methods of caring for the milk yourself. The Board may not know such a cow exists. Ascertain if it has been tested for tuberculosis. If not, telephone the Health Department, and follow up your telephone message to see if your request has been carried out.

Dr. Douglas, of the Winnipeg Health Department, strikes the keynote when he says: "No sanitary improvement worth the name will be effective, whatever acts you pass or whatever powers you confer on public officers, unless you create an intelligent interest in the public mind.

We are very dependent upon the co-operation of the public for any success in health department undertakings. We must, therefore, inform you of the facts connected with our work and ask your co-operation."

Dental Inspector's Outline of Toronto School Work.

Some of the work to be undertaken this year in Toronto Public Schools by Dr. Doherty, Dental Inspector:

1. Continuance of mouth inspection. Notification of defects sent to parents.

2. Lectures to teachers, parents, etc., on mouth hygiene.

3. Talks to pupils on care of the teeth.

4. Preparation of an Oral Hygiene Exhibit, to be left a certain time in each school, with lecture to parents and pupils while there.

5. Pamphlets for distribution among parents.

6. Some bacteriological tests for unhealthy teeth and mouths, for pneumococci, streptococci, tubercle bacilli, Kloeb's Loeffler bacilli (diphtheria).

7. Arranging to place a supply of the proper tooth brushes and dentifrice in each school, preferably under charge of the school nurse, to be sold at cost.

8. Endeavor to make some arrangement to have each new pupil, when admitted, required by principal to supply himself with tooth brush and dentifrice, and receive instructions from nurse. A pamphlet, at the same time, to be given or sent to the parent.

7. Supplying the city press with occasional short articles of an educative nature on the importance of mouth hygiene.

10. Tooth brush drill.

11. Using facts relating to Oral Hygiene, such as "Good Teeth — Good Health" when possible, as writing exercises, etc.

INTERNATIONAL

ADVANCE NOTICES.

American Public Health Association Convention, Havana, Cuba, Dec. 4-9, 1911. Dr. Wm. C. Woodward, General Secretary, Washington, D.C. *International Red Cross Conference*, Washington, D.C., May 7-15, 1912, Dr. C. R. Dixon, General Secretary, Canadian Red Cross Society, 192 Blear Street West, Toronto Ontario; *International Eugenic Congress*, London, England, July 24-30, 1912. Address the Honorable Secretary, 6 York Buildings, Adelphi, London, England. *Seventeenth International Congress of Medicine*, London, England, summer of 1913. Further particulars of this Congress will be given later. Honorary General Secretary, Prof. H. Burger, Vondelstraat, Amsterdam.

International Red Cross Conference.

Empress Marie Feodorovna Prize Competition.

To be held in conjunction with the 9th International Red Cross Conference, Washington, D.C., May 7-17, 1912.

Programme.

1. A scheme for the removal of the wounded from the battlefield with the minimum number of stretcher bearers.
2. Portable wash-stands for use in the field.
3. The best way of carrying dressings for use in regimental aid posts and dressing stations.
4. Wheeled stretchers.
5. Transport of stretchers on mule back.
6. Easily folding portable stretcher.
7. Transport of the wounded between warships and hospital ships and the coast.
8. The best method of heating railway carriages by a system independent of steam from the engine.
9. The best model of portable Roentgen apparatus for the employment of X rays at the dressing stations and on the field of battle.

Prizes.

First prize of 6,000 roubles (approximately $3,000).

Two second prizes of 3,000 roubles (approximately $1,500) each.

Six third prizes of 1,000 roubles (approximately $500) each.

Inventions entered in this competition are to be displayed at an exhibition to be held on the occasion of conference.

Further information may be obtained from Dr. C. R. Dickson, General Secretary Canadian Red Cross Society, 192 Blear Street West, Toronto.

The Thirteenth Annual Conference of the American Hospital Association.

The Thirteenth Annual Conference of the American Hospital Association, held in New York from September 19th to 22nd, under the presidency of Dr. W. L. Babcock, of Detroit, was highly successful. The audience was largely composed of women, mostly superintendents or matrons of hospitals, or nurses. They took their part in the papers and discussions with great ability. As speakers they compared favorably with the men. The programme was long, so it must suffice to refer to only some papers of outstanding public concern. Mr. George McAneny, president of the Borough of Manhattan, in welcoming the members to New York, took as his subject hospital reform. He sharply criticized New York's divided system of hospital supervision and advocated a centralization of the hospitals of the city. He deprecated the action of the city authorities in demanding the provision included in the new charter for centralizing the control of some of the city hospitals, asserting that it had put the situation back into its former position.

The first, and perhaps the most generally interesting, paper read was by Dr. J. N. E. Brown, of Toronto, until recently superintendent of the Toronto General Hospital. Dr. Brown had just returned from a tour of inspection of hospitals in Great Britain, Germany, France, Austria, and Holland. He referred to the various systems of hospital support, and considered that state or municipal support of such institutions, as in vogue on the Continent, was superior to the voluntary method of Great Britain, and the partially voluntary method of America. Dr. Brown also appeared to be favorably prepossessed with the European method of hospital administration, and stated that in his opinion "a medical man, *caeteris paribus*, makes the best sort of director of a large hospital, but when appointed to fill such a position he should be relieved of work which

belongs to the medical staff. The proper administration of a large hospital demands the sole attention of the head." He briefly described the organization of European hospitals, and expressed himself in favor of the European system generally. As to hospital construction, Dr. Brown thought that the architects of the best of these institutions in Europe had little to learn from their American and British confrères. He was especially impressed with the situation of many of the large Continental hospitals, placed in large and beautiful grounds, affording plenty of fresh air and secluded from noise. Another feature of some of the Dutch and German hospitals which greatly struck Dr. Brown was the ample provision of bath-houses and of disinfection-houses. Finally, the much vexed question of ventilation was dealt with, and many of the methods, elaborate and otherwise, for securing a constant supply of fresh air in the wards of hospitals were described at length.

Mr. Edward F. Stevens, A.A.I.A., of Boston, Mass., Dr. Brown's companion during his European pilgrimage, dealt at considerable length with the details and equipment of British and Continental hospitals, and compared these with the details and equipment of American hospitals. Mr. Stevens showed on a screen illustrations, exterior and interior, of numerous hospitals visited.

Another excellent paper was read by Mr. J. M. Cosgrave, manager of the Winnipeg General Hospital, on the "Development of Typhoid Fever Among Hospital Workers." It really was a vindication, if such were needed, of preventive anti-typhoid vaccination. Mr. Cosgrave said that until anti-typhoid vaccine came into use it had been almost impossible to prevent the spread of the disease among nurses and hospital employees; but since its use became general typhoid fever among hospital employees had almost ceased. Dr. H. W. Austin, of the United States Public Health and Marine Hospital Service, also eulogized the efficacy of the vaccine, and said it was being used more and more in the navy hospitals, and with success. Dr. Morrell, of Baltimore, told of the results of its use in the United States army camp at San Antonio during the manœuvres, and said that among 1,200 men who submitted to the treatment, only one contracted the disease, and that in a mild form. Dr. Willie G. Neally, assistant superintendent of the New York Hospital, emphasized the importance of properly administering anæsthetics, which was frequently as essential to operative success as the work of the surgeon.

Mr. Robert W. Hibberd, secretary of the State Board of Charities of New York, complained that the hospital facilities of New York City were woefully inadequate to the needs of the population. He further stated that the system of management was far too complicated, and he also was of opinion that centralization of the hospital organization was required. The plans of the State Board of Charities, the great hospital department of the city, which cares, probably, for three times more patients daily than the other hospital departments, he said, contemplate that Blackwell's Island shall eventually become a great hospital park for the care of the adult sick poor, that Randall's Island shall be made into a park for sick children, that the King's County Hospital property shall be dealt with in a similar manner, and that the relatively able-bodied poor, who are really the ones cared for by the department, shall be maintained at the Farm Colony on Staten Island, where they may be given plenty of work suited to their strength and capacity. Mr. Hibberd concluded that New York was a generation behind the age in its public hospital and ambulance facilities. To bring it up to date it urgently required an unified hospital and ambulance system.

Mr. Abraham Flexner, of the Carnegie Foundation, one of the authors of the report on the medical schools of America, read a paper on hospital organization and research, wherein he reiterated the charges made in his report against small and inefficient medical schools. Mr. Flexner pointed to the satisfactory fact that 20 medical schools of this class had gone out of existence during the past year, owing to the campaign among the hospitals which permitted them to flourish. Mr. Flexner concluded by naming several medical schools which, he said, ought to be closed. Mrs Margaret Engelhart, president of the Association of the Frances Willard Hospital of Chicago, took exception to Mr. Flexner's strictures on certain of these medical schools, and stated from personal know-

ledge that at least one of them produced as fine a student body as could be desired, and that a graduate of that school would be welcome on the staff of the Frances Willard Hospital. The Rev. A. S. Kavanagh, superintendent of the Methodist Episcopal Hospital, Brooklyn, read the report of the committee on hospital efficiency, hospital finance, and economics of administration, and incidentally paid a well-merited tribute to the work done by Dr. Doty as health officer of the port of New York. This expression of the gratitude of the citizens of New York to Dr. Doty was peculiarly fitting, in that recently Dr. Doty has been fiercely assailed with charges of neglect of duty by political opponents.

American Association of Railway Surgeons.

The enactment of uniform laws in the several states to govern sanitary conditions of railroads was discussed at a meeting of the American Association of Railway Surgeons held in Chicago, October 18, 19 and 20.

At a meeting of the association a year ago attention was called to the difficulty, not to say impossibility, of strict compliance by railroads that are interstate carriers, with the widely varying sanitary laws quoted by the health boards of different states for the regulation of railroad companies. Surgeons representing nearly all the railroads in the country attended the Chicago meeting.

UNITED STATES

ADVANCE NOTICES.

American Association for Highway Improvement, Nov. 20-24, 1911, First Annual Convention, Richmond, Va., Logan Waller Page, President, United States Office of Public Roads, Washington, D.C. *Health and Sanitary Exposition*, week of November 16th, 1911, in the Coliseum, St. Louis, Mo.; F. W. Payne, manager.

New York Commission on Congestion of Population.

The commission on congestion of population appointed last year in New York, have made their recommendations, under 14 heads, as follows:

1. Restriction of the height or volume of buildings other than tenements.
2. Restrictions upon the lot occupancy of buildings other than tenements.
3. Restriction upon the height of tenements.
4. Methods of encouraging three family tenements.
5. Measures to prevent room and apartment overcrowding.
6. Measures to secure better conditions of labor.
7. Measures to secure a better distribution of factories.
8. Parks, playgrounds, schools and recreation centres.
9. Measures to keep land cheap and to provide good and cheap housing.
10. Measures to promote health and safety.
11. Distribution of population through municipal control over charities.
12. Immigration.
13. Delinquency.
14. Public squares and buildings.

Art in Medicine at Johns Hopkins.

An interesting development of medical work is represented by the appointment of a professor of "Art as applied to Medicine" at the *Johns Hopkins University*, Baltimore, Md. It appears that this new subject will chiefly deal with the training of artists for illustrative work in connection with medical and surgical publications, there being those who consider that such work can only be efficiently carried out by experts who have a personal knowledge of technical subjects. If this idea becomes popular it seems as if the future will see a special type of art-medical student at the hospitals.

Erie County "Fee Splitting."

Certain members of the *Erie County, New York, Medical Society* are accused of fee splitting, or dichotomy. This practice consists of division of the fee for a surgical operation between the surgeon who performs the operation and the medical attendant who sends the patient to that particular surgeon. It is customary for the medical attendant to accompany his patient to the surgeon, and patients are prone to consider such a trip as a friendly duty on the part of their adviser, and sel-

them offer to defray even his travelling expenses. In its least objectionable form the fee splitting has been restricted to the surgeon's including the advising practitioner's expenses in his bill; but the practice has quickly outgrown this simple form, and certain medical men, it is alleged, have made a custom of sending their patients to the surgeon who was willing to pay the largest commissions. Reprehensible as this custom is, it is an inevitable outcome of the corroding of the profession by the small, proprietary medical schools, chartered, generally with great pride, by communities that have been newly furnished by the Federal Government with a State constitution. The various States are only now waking up to the evils which they, unthinkingly and with mistaken liberality, fostered years ago.

Mushroom Poisoning and the New England Federation of Natural History Societies.

At the recent meeting of the *New England Federation of Natural History Societies*, President Barlow, of the Lawrence Society, called attention to the excellent work that has been done by various local mycological societies towards the prevention of mushroom poisoning. This was the more to the point since he referred to the numerous recent cases of illness in New York City and its vicinity with more than twenty fatalities. Under the supervision of the person who knows the mushrooms there is no risk of poisoning, but a few simple rules must be observed. The collection should be made with some degree of care and the species kept apart. No injurious nor unknown mushroom should be allowed to come into contact with the good ones since their influence may contaminate the edible ones. For these reasons mushrooms gathered promiscuously should not be used for the table. To many persons all mushrooms look alike, and in this lies the danger, but with those having the proper knowledge the sorting of them is as easy as it would be to select the five-cent pieces from a mixture of dimes and pennies. It is in affording to the people generally an opportunity to gain this knowledge that the natural history societies are an aid to the public health authorities, and the frequent exhibitions in Boston and elsewhere are distinct means of disseminating useful knowledge.

THE EMPIRE AND THE WORLD ABROAD

ADVANCE NOTICES.

The Pure Food and Health Society Congress of Great Britain, London, England, March, 1912. Particulars later. *Congress of the Universities of the Empire*, London, England, July 31st, 3rd, 4th and 5th, 1912. Fifty-one universities have arranged to send representatives; and among the questions proposed to be discussed by them are the following: University Organization; Universities in Their Relation to Teachers and Undergraduate Students; Universities in Their Relation to Post-graduate and Research Work; Universities in Their Relations to Schools and to Agencies for Higher Education. Other subjects for discussion will probably be: Whether any Common Understanding Will be Possible Among the Universities of the Empire as to the Extent to Which They Could Recognize Each Other's Entrance Examinations; The Desirability of Increased Facilities for Post-graduate Study; The Possibility of Some Plan of Interchange of Professors; What Could be Done by Universities in Regard to After Careers of Students, and the whole question of the Financial Support Given from Public Sources to Universities. Inquiries with regard to the Congress should be addressed to Dr. R. D. Roberts, at the Congress Office, University of London, South Kensington, London, England.

Papers for the Incorporated Association of British Medical Officers.

From a notice just received it appears that the members of the *Incorporated Association of British Medical Officers* have an interesting programme of debates for the session which opened on Oct. 20th. A number of highly important subjects, in connection with hospital work, are to be discussed at coming meetings, papers having been promised on "Medical Treatment of London County Council School Children," by Mr. H. C. Barker, B.A., LL.B., superintendent of the out-patient department at the London Hospital: "Hospital Appeals," by Mr. Godfrey Hamilton, secretary of the National Hospital for the Paralyzed and Epileptic; "Paying Hospitals of the Future," by Mr. L. H. Glenton-Kerr, secretary of the Great Northern Cen-

tral Hospital; and "The Samaritan Fund," by Mr. Sydney Phillips, B.A., steward of St. Thomas' Hospital.

A Treatment Scheme for School Children in Carnarvonshire.

The Carnarvonshire Education Committee have decided to establish a voluntary scheme, to be entitled the "Children's Medical Relief Fund," in order to secure advice and treatment for children found defective in the course of school medical inspections. All parents are to be asked to contribute, the idea being that the scheme will develop a desire among the children to help one another. The county treasurer is to be asked to control the fund, and an influential committee has been appointed. Other features of the scheme have been agreed upon as follows:

1. That the head teacher act as local secretary and treasurer for each school, and that the school managers be consulted.

2. That the school contribution be sent to the county treasurer before the second Saturday in every month.

3. That the amount of the contribution by each child be as follows: Where one child comes from the same house 1d. per month, where two children come from the same house 1½d. per month, where three or more children come from the same house 2d. per month.

4. That the benefits of the fund be limited to those subscribing, unless in exceptional cases.

5. That treatment for the following ailments be covered, viz., diseases of the eye or nose or throat, ringworm, teeth (if funds are available), and any other special cases sanctioned by the committee.

6. That cases requiring treatment be considered by the local managers at their regular meetings and a full report on each case be prepared for the information of the committee appointed to administer the fund.

7. That the collection of subscriptions be begun immediately.

The monthly contribution of each child will be made at school on a day to be appointed for that purpose, during the first week of every month. It is hoped to make arrangements to provide advice and treatment in all urgent cases coming under the fund without delay.

The Late Dr. Hughlings Jackson of England.

It is generally acknowledged that the late Dr. Hughlings Jackson, whose death occurred on the 10th of last month, was the man who laid the foundations of the science of neurology, and that his observations in connection with nervous disease were those of a master-mind. Writing to the *British Medical Journal* in this connection, a well known physician attached to the London Hospital states that Dr. Hughlings Jackson will probably "be known in the future as the greatest genius in his speciality that the world has ever seen."

Danish Society for Aid of Pathologic Imbeciles.

In Denmark, where there has been attained a high degree of public social work, the Society for the Aid of Pathologic Imbeciles has just embarked on a new experiment. It has purchased the island of Livoe, situated in the fiord of Lim, that curious, straggling strait that cuts off the most northern department from the rest of the kingdom. In the central expansion of the fiord a lake perhaps 25 miles by 10 is formed, with sheltered water, in the middle of which Livoe is situated. Here there will be established an asylum for those weak-minded persons who have manias annoying to the public, more particularly tending toward vagabondage. Such individuals and others who are housed within stone walls for the public security may be benefitted by a measure of freedom. It is intended by means of the island to let them enjoy the freest kind of life and the most natural, and those given to vagabondage will have room to exercise it in the square mile of territory. They will be secure, for the expanse of surrounding water will be sufficient restraint. There will be furnished attendants and internes who will study the cases, and for the patients there will be provided light occupations and work on farm or forest or in tile potteries or charcoal mounds. The outcome of the experiment will be well worth watching.

The public health is the foundation on which reposes the happiness of the people and the power of a country. The care of the public health is the first duty of a statesman. —

Disraeli.

DR. J. D. PAGÉ

SUPERINTENDENT IMMIGRATION HOSPITAL AND PORT OF QUEBEC.

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Special Articles

HYGIENIC STORAGE AND DISTRIBUTION OF WATER—AND FIRE PROTECTION

BY DR. A. P. REID,

PROVINCIAL HEALTH OFFICER OF NOVA SCOTIA.

An efficient gravity supply and distribution when available fills the bill, but, unhappily, unless in large cities or towns or exceptional conditions but few houses have these needed conveniences. Even in large cities from many causes the water supply may fail at an unexpected moment and dire loss result.

So much is this the case that in towns with good water supply the sky line is variegated by unsightly tanks posted in odd situations and announcing where *cure alls, liquid refreshment* and *nicotine solutia* are obtainable.

GRAVITY SUPPLY FROM ELEVATED TANK.

Common sense dictates that if you have a supply of water always available and from a sufficient height you have all that is needed, hence the *tank gravity* system, and were it not for inherent defects it would fill the bill. The *standpipe* is more depended on for regulating and equalizing pump and pipe pressure than as a source of supply.

How to offset the defects of the tank system is the object of this paper, and this the more as the expense for installation and maintenance of the better method can be very much less than what it now is for inefficient service. To fittingly discuss the subject we should know the defects of the tank gravity system:

1. Since the water tank must be for structural reasons but little above the roof —in case of fire there is but little available pressure, and that is limited, and the roof and upper part of the house is generally where pressure is most required.

2. It is costly to erect, owing to its situation.

3. A secure foundation is not easily obtainable, and this the more if it is to be adapted to a building already erected.

4. It must be outside to give height needed, and hence must run the risk of hurricane and frost.

5. Its foundations and support should be altogether independent of the building—hence the difficulty of adapting to old buildings. This was emphasized by the

late collapse of a large building, with loss of life and property, in Montreal. Let us think for a moment—200 gallons of water weigh a ton, and a tank should hold from 200 to 1,000 gallons—a weight of from one to five tons, and to this is added the weight of tank and fittings. Let this be posted from 40 to 80 feet in the air, and it means a costly engineering work.

6. Maintenance and supervision—These are apt to receive but scant attention, unless it be in continuous use, and this is the exception, as the tank is intended rather for emergencies; being out of the way it is apt to be unseen and unheeded. Filth is apt to accumulate and the purity of the water is always questionable because stagnant.

7. In case of conflagrations, buildings thus provided are dangerous to the fire fighters, because in the confusion if the water be not used or run off the supports (weakened by heat of conflagration) make the tank such a menace that firemen must hesitate to run the risk of injury to save property, when threatened with probable fall of tank.

8. Its situation makes it not readily accessible, and if not in constant use it is apt to be more or less out of commission, water leaked out or not filled, outside pipes frozen at valves, stiff and unworkable, though not defective.

* * * * * *

The common sense that put the tank on the roof of the house, where gravity would at all times be at command for distribution, would at once concede the insuperable advantage of putting the tank in the cellar or underground in any convenient locality—provided distribution was always at command, and not dependent on any outside agency or mechanical contrivance.

The underground tank disposes of all the weighty objections above outlined—even cost—because the tank above is all that is needed. The subsidiary apparatus for filling the tank and distribution is about the same, no matter where located.

What we need is something that will take the place of gravity, be available at a moment's notice, and like it be placed in operative function by simply "turning a tap." This is at our command if we only interrogate nature by studying the properties of gasses.

The Pneumatic System.

In the air we have an elastic medium that, unlike many elastic substances, is not liable to be broken or lose its properties—hence it is reliable. Let us suppose our tank to be closed at the top and not open, as in the gravity system, and that water is then pumped into this closed vessel. The water will stay at the lowest place and push the air up above it, but the force required to compress this air is not wasted—it is still retained by the air, and is at any time available.

If the tank be pumped three-quarters full there will be a pressure of about 30 lbs. to square inch, equivalent to a gravity pressure of between 60 and 70 feet in height; and if more water or air be pumped in then any desired pressure is obtainable. Very few public water systems have an available pressue over 40 lbs. to square inch; it is more likely to be 15 or 20, or a gravity pressure of 30 to 50 feet. Hence it is not at all difficult to have all the advantages of a good city supply in any village or detached homestead. To have water for the bathroom, kitchen and any portion of the house, barn or outhouses and fire protection, etc., by simply "turning the tap" all the advantages of the gravity system supply without its disadvantages.

From a hygienic point of view it has most marked advantages. The closed tank prevents the entrance of any contaminating material, and the introduction of air with the water by aerating in so far purifies if there be any oxidizable material in it.

The *pneumatic system* has some little inconveniences peculiar to itself, and these we will consider:

1. Water under air pressure will absorb the air in time and promote lower pressure. Though a disadvantage from a pressure point of view it is of great value in aerating the water, not only on the score of purification, but it is rendered more palatable. Hence a gauge is necessary to inform the attendant what the pressure is, so that more air or water (or both) may be pumped in, and the pressure not only restored, but any additional pressure that may be needed can be given. The pumps are so arranged that they pump in additional air when delivering the water, so that this difficulty is not so prominent, and in any case the condition is under the

control of the attendant.

2. The tank must be filled, but this must be done with the gravity system. If in a city the tank may be filled from the public supply and kept as a reserve and the pneumatic system lends itself to a similar use, the public supply can be turned into the pneumatic tank, and it will take all the supply and pressure it can give, which is more than the gravity tank can do, as its pressure is limited by the height of the tank.

The pneumatic system has this failing: The pressure will fall as the air becomes absorbed, and it will require air to be introduced to keep it to standard. As to pumps—they may be worked by hand or power—by steam, gas, or gasoline or hot-air engine, windmill water power if available, or electric motor.

These details are technical and need not be discussed, as they will vary with the locality to be served.

Cost.

The question of cost is of more than ordinary moment, and I will quote from advertised prices of manufacturers that guarantee results. (It is evident that names can not be given here).

Outfit, $39.85; steel tank, 140 gallons, tested to 125 lbs. pressure to square inch; pressure gauge, self-cleaning water gauge, brass hose bib, brass double acting force pump (water and air). This outfit does not include suction pipe to the well, nor distribution pipes, which vary with the service demanded. Larger tanks vary in price from $15 to $50; extra will give tanks varying from 220 to 700 gallons. The small tank requires frequent replenishing, and a larger one is preferable for many reasons. Outfit, $64.75, in addition to the above, furnishes a 30-gallon (kitchen) hot-water heater, with connections for water discharge, at six different places. Outfit, $137.70, fits up kitchen, bathroom, water-closet, and all fixtures, as well as outfit for pumping and distributing the water.

Gasoline engine, $55.78. 1½ horse-power engine, with trucks, belt pulleys, pump jack. This can be used for any other engine work, as well as pumping.

It may be noted that the framework for supporting a gravity tank would alone cost more than the whole outfit, including bath-room, water-closet and hot water and all house fixtures.

Fire Protection.

We are apt to overlook the very numerous losses by fire that take place in ex-urban localities. Looking at them as unavoidable, though this may to some extent obtain, yet there can be much mitigation of loss were there facilities for fire protection aside from the lower insurance premiums that an up-to date water service would confer.

Allow me to describe a condition I have too often seen, and similar ones can be recalled by most people resident in the country and smaller villages:

Carelessness or a wandering spark ignites an outhouse and flames spread rapidly, there is but little help available, and this may be chiefly the female members of the household. The flames, uninterfered with, creep along from one part of the roof to another, leap an intervening space and seize another structure, and so on until everything is more or less consumed. There is plenty of water in the well or adjacent brook and mayhap 5 to 50 willing hands to help that are paralyzed by conditions. A few buckets of water rightly placed would stay the progress of the flames, but how many ordinary people are able to negotiate a slippery, steep, slanting roof, and even if this be attained the advancing heat must be contended with on a very insecure foothold. A few bolder spirits may face the difficulty with more or less success, but how are they to get water up there and how place it so that it will do the most good, under projecting eaves and in exposed places mayhap licked by the flames—quite an impossibility—for the heat of the advancing flames paralyze any attempt to get near enough to the exposed place with the saving water. Ladders may not be available, and if they be are most likely out of commission from fragility or out of repair, as anything not in daily use is apt to be.

How often have I seen a blazing spark light on shingles at a distance from the main conflagration that a cupful of water would quench, yet the whole structure doomed to destruction, because the roof was too steep for unskilled travelling on, or means of access to the roof unavailable even if the heat of the flames did not interpose.

There is an error in most of our building construction, especially private dwellings, in not having facile access to the roof and narrow pathways along the ridge of the roof to make every part readily accessible. This is much needed even for repair. It is not a difficult proposition, nor costly, and that it is not in common use must be the fault of our house constructors, who do not appear to think of its desirability, nay, necessity. Fancy finicals, etc., we have *in galore*, but a narrow plank walk along the ridge and fixed ladders always in place is far too exceptional. A chimney catching fire is not infrequent, but it is hazardous to approach it, and we must trust to luck. I speak the more feelingly on this subject, as I have these conveniences and know how serviceable they are.

Under the circumstances above detailed what a Godsend it would be if, with a few feet of hose and an available supply of water under pressure at the tap—even though limited in quantity—where a woman or even a child could stand on the ground away from the heat and direct the stream, even through the flames on to the projecting eaves of the roof and underneath and on to the threatened side or roof of the building. With water under 40 lbs. pressure there is no part of an ordinary building that is not accessible—with no risk to life or limb. With the pump and tank in a safe place, as it should be, willing hands could keep up the supply indefinitely. How many homes might thus be saved and dire loss prevented, except in those few cases where the fire may spread so rapidly as to prevent anything being done, even to saving of life. But even here a good water supply would limit the extent of destruction and dictates that the pump and tank should be placed where it would be out of danger.

Everyone knows the difficulty, nay, danger of washing windows on the outside of upper storeys. Again, the flower garden needs watering, and this labor is apt to fall to the female members of the household, and carrying buckets of water means work that is apt to be minimized to the cost of the plants, but we need not dwell on the advantages accruing from water under adequate pressure that the pneumatic system gives.

It is not likely to be impracticable to put down a driven well beside the underground tank, with a very limited cost for piping, and no risk from frost. To prevent its being placed out of commission in case of fire it would be better to be placed in a small cellar by itself, convenient to all the places to be furnished with water. Water taps could be placed where wanted, being sure to have one on the outside for hose connection. Even with a power pump a hand pump is a good standby, as they are not costly. Pipes for distribution would need to be four feet under to escape frost and laid with sufficient fall (the larger the better) towards the drainage cock, so that the whole water system could be readily emptied if needed, especially in winter, when the house might be unoccupied.

There are many details that may be suggested that need not here and now be discussed, but we think we have outlined practical methods of obtaining water continuously under pressure, against which adverse criticism can not be justly made at a cost for construction and maintenance astonishingly small, and with a possible perfection of result that leaves little to be desired. There is no pet theory advanced and nothing of novelty, for the practical science of to-day would give to those who know it and desire it conveniences that are not sufficiently widely known.

THE PUBLIC SCHOOL DOMESTIC SCIENCE DEPARTMENT

AS AN INFLUENCE FOR ENFORCING PURE FOOD LAWS AND CIVIC CLEANLINESS.

BY MATIE PEARL CLARK

DEPARTMENT OF HOME ECONOMICS, OAKLAND POLYCLINIC

Social service is a tremendous force in our new education. More and more the boys and girls of to-day are having impressed upon them their responsibility for their neighbors. They must do their share toward the health, comfort and happiness of those who are not only neighbors, but also of the whole community. As Mrs. Ellen H. Richards has said, speaking before the recent United States National Education Association Congress: "Social improvement means cleaner streets, more inspection of markets, dairies, factories and shops; in short, more expense for community living, but a simpler individual life. The cost of living must be considered a community problem."

One of the first laws taught the girl of our public schools is the law of supply and demand. It is the foundation of the commercial world. Commercialism quickly saw the opportunities in applying the factory system to home industries. It was not long before the housekeeper found herself face to face with the relative values of factory made and home made articles. At first the articles were of good quality, but soon competition became keen, and greed for gain made easy the temptation to take advantage of opportunities for adulteration. Before she was aware, the housekeeper became the prey of unscrupulous manufacturers who formed trusts, controlled the tariff, manipulated supply and demand, and increased the cost of living.

So the girl finds herself in a world of trusts that touch every phase of her daily life. Dr. Leffman has said, "a trust is a combination of persons who have obtained control of most of the means of production and selling of a certain article, who then proceed, by reason of such control, to limit the production, or make the community pay more for the articles than formerly, and who divide the increased profit among themselves." Here, supply and demand are manipulated for selfish ends.

As a means of self protection the girl is being taught the power of concerted, persistent demand. Where there is a demand, there is always a supply created. And she is beginning to demand pure foods and sanitary surroundings.

That individual efforts count, is shown in the work of one domestic science teacher in Portland, Oregon. She was asked to do something to improve the markets of that city. "Through the State Health Office all back doors were opened. She went to the newspapers; she asked the Woman's Club to go on a tour of inspection. All this was brought about in three days. On the fourth day a meeting of householders was called. The Health Department gave official sanction to the movement. Market men were notified they must clean up. A clean list and a dirty list were to be made and they must comply with certain regulations in order to be on the clean list. She worked two months, and the city once aroused, decided it was a good thing to have inspection made. A woman now has the office and has power of arrest."

The work of Miss Jane Adams is well known. She asked to be appointed inspector in one of the wards in Chicago where the death rate was highest. She gave special attention to garbage, and it was not long before that ward had the lowest death rate in the city. One could have no better example of the relation of filth to disease, or the importance of efficient inspection which means enforcing the city regulations.

The Woman's Clubs all over the land have been taking an active part in improving civic conditions, and have brought about many radical reforms, especially where women have been appointed inspec-

tors, or placed in charge of the street cleaning department.

Before the United States National Pure Food and Drugs Act went into effect five years ago, a demand came from the people in general, and the women in particular, for a pure food law. They had the aggressive assistance of Dr. Harvey W. Wiley, who made public the extent of food adulterations. Some states, like Massachusetts, New York and Indiana, had most stringent pure food laws, thus setting a precedent for the state laws and a standard for the National law.

While this National Law is defective, it has placed a check on the most serious abuses, especially regarding imported products and interstate commerce. It has tended to purify foods by exposing contents, adulterations and preservatives used in manufacture.

The public school domestic science departments have taken up the problem and are creating a demand for pure foods. Some schools buy foods in the open markets, test them for their purity, and place them on their white list or their black list. Sometimes they go farther, and place stores on their white list or black list. In a certain city the dealers learned this, and made an effort to get on the approved list, for they know the power of public opinion and the law of supply and demand. Naturally this has resulted in students demanding goods of certain brands that fulfilled the requirements for purity. That unscrupulous manufacturers fear investigation is shown by a specific case in the southern part of California, where the manufacturers went to the city superintendent and requested that such investigations be discontinued in the high schools.

This is very different from the manufacturer who is willing to have his place inspected. A certain candy manufacturer will frankly tell you he is using glucose and artificial colorings in his candies, and that his chocolate coatings are of many grades. He will also show in what ways he is complying with the pure food laws in regard to gelatine and grain alcohol. The girls in visiting such places learn to compare the value of factory-made and home-made products. They get new ideas of wholesale and retail cost, new ideas of the commercial value of the cleanliness of production. After visiting an unsanitary bakery they have a new appreciation of bread made under clean conditions. They voluntarily advertise the clean place and condemn the dirty place. Honest manufacturers know this, and those factories that are run under model conditions appreciate the value of this voluntary advertising. Thus an indirect influence in the community is being felt in enforcing pure food laws and sanitary surroundings.

The public school girl of to-day studies city ordinances regarding the sale and exposure of foods and sanitation. She quietly investigates the grocery store, the butcher shop, the bakery, the dairy or milk depot patronized by her family. She makes reports in class and is given moral backing in patronizing the clean place and condemning the dirty one. Sometimes the boycott is used most effectively. But this is rare; more often supplies exposed to flies and dirt are simply refused. This is carried out in a certain country town in California, where a small community makes it difficult to eliminate the personal equation and the work must be done diplomatically.

The girl of to-day has discovered that while the ordinances are good they are often difficult to enforce for lack of enough inspectors. She realizes that public opinion and community interest, aggressive and persistent, must enforce these improvements.

Public school children and the community as a whole found how much they could do in exterminating the rats and mice in San Francisco and the bay cities three years ago. They learned that even the crumbs from their lunch boxes drew mice and flies to the school yards and the buildings. They learned a most vivid lesson of individual responsibility for the health of the community and what systematic and intelligent co-operation could accomplish.

Another field that is open to large results is the war against flies. Not only girls, but all the pupils of the schools, are being taught the danger of the common house fly. The State Inspector of Washington has just placed 20,000 circulars in the hands of the school children of that state to assist in fighting and exterminating flies. They take one to the first principles of civic sanitation — the destruction of all waste.

The high school girl learns through the

microscope how flies carry disease She sees gelatine slides where a fly has walked across, and the bacteria deposited by his feet. In a certain high school she has voluntarily cleaned the steps outside the Domestic Science building when finding the dirt there attracting flies.

In California the domestic science departments all over the state are agitating for a clean milk supply. Whenever possible visits are made to model dairies. When the girl learns the value of healthy cows, the importance of well ventilated stables, the necessity of sterilized utensils, the necessity of absolute cleanliness of the men who do the milking, she realizes the importance of intelligence and training in the production of pure foods. She understands then why clean milk costs double that of ordinary milk. She also better appreciates the relation of milk to infant mortality and realizes that it is a community problem. And it is impressed upon her that she must do her share in demanding more inspection of dairies and proper distributing centres.

The public school takes up home sanitation in great detail, for, as Mrs. Williams, Supervisor of Domestic Science in the New York City Schools, has said: "Clean homes mean a clean city. There is a lot of science behind the proper care of the sink and the garbage pail, science that means much valuable aid to the municipal housekeepers, the Board of Health, and the Street Cleaning Department." The importance of a well constructed house, well lighted and ventilated, and with proper plumbing, are emphasized as essential requisites for a healthy family life. A clean water supply, and the disposal of waste, present specific problems in both town and city. The typhoid fever epidemics due to careless handling of milk, or polluted water supply, show the relation of home sanitation to the spreading of disease.

The relation of sanitation to public health is also a part of every high school course in domestic science. It often works in connection with the Woman's Civic Clubs, where outward results are very marked.

The large cities offer more difficult problems with their congested districts, their bad buildings poorly lighted and ventilated, with imperfect or limited water supply and neglect in disposal of waste But even here, are found improved conditions, where the girls have come in touch with public school domestic science; physicians report better health conditions in the homes, and the children come to school with cleaner clothes and cleaner bodies Furthermore, they carry home much printed matter in their own language, telling how to take care of milk, how and what to feed children, how to take care of them in hot weather, the importance or fresh air, and many other fundamental health laws In New York City we find much interesting work of this character. Nearly all our large city schools are raising the standard of health among school children by improving lunch room conditions. Here, only pure wholesome foods are served, and the lunch rooms are generally under the supervision of domestic science teachers.

The public school domestic science department makes its classes familiar with city ordinances on foods and civic sanitation, and while much objection is taken in some quarters because of the cost of cartons and wrappings, the result of such domestic science teaching is an immense gain in the cleanliness of foods, and a true economy in the preservation of health. A study of civic ordinances tells students that fruits must be covered with nets or screened from flies and kept indoors as a protection from dust; street vendors of foods must keep their wares covered; that the up-to-date market or grocery store has tile floors, sanitary walls, tile or marble counters. Students are told that screens and glass receptacles now take the place of old wooden kegs, and that on the streets, the vendors of confections, nuts and popcorn must keep their products under glass — so pointing out the fact that the public is demanding civic cleanliness in regard to foods.

Many industrial, economic and social problems are involved in this subject of foods and civic cleanliness. One of the most difficult problems is to get offenders of pure food laws punished. Some come under the Federal Laws, some under the State or Provincial Laws, and others under municipal ordinances.

The State Board of Health in California publishes a list of the violators of the State laws. The district attorneys of the various counties conduct the prosecutions

When a single list contains the names of more than one hundred violators, the housekeeper realizes the inspecting body is active and vigilant.

Interstate commerce is pretty closely watched by government inspectors. But investigations have shown that punishment and fines have been very light, or none at all. What is a fine of ten dollars to a manufacturer who is making thousands?

A specific case is the United States investigation into the use of benzoate of soda in foods. The United States National Law requires that such investigations be conducted by the Bureau of Chemistry at Washington. Dr. Harvey W. Wiley took hold of the work with characteristic thoroughness; the final decision being arrived at that benzoate of soad was injurious to health. The manufacturers protested and demanded that a special commission be appointed to investigate the matter further. The request was complied with by President Roosevelt; and after a very superficial investigation Dr. Wiley's decision was reversed. When these conditions can exist, the consumer thinks government regulation must be something of a farce.

The public school domestic science department is endeavoring to create a public demand for pure foods, through intelligent instruction of the girls, who, in turn, influence the homes. Such united efforts all over the country are already showing results. But the real influence in the community will be felt when the girl of to-day becomes the housekeeper of to-morrow, when she will use to her fullest power the law of supply and demand in pure foods and sanitary surroundings.

A STUDY OF THE VENTILATION OF SLEEPING CARS

BY THOMAS R. CROWDER, M.D.,

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For the purpose of securing a suitable exchange of air in railway cars many types of ventilators have been suggested and not a few have been given practical tests. About three years ago I was asked to report on the efficiency of one of these. It became evident that it would be necessary to establish some basis of comparison, since it does not seem to have been estimated in exact figures to what degree natural ventilation of railway car is effective. As the problem is of lasting importance and is likely to recur, it seemed advisable to make a fundamental study of the question and to place the results within reach of those who might have occasion to make use of them.

A very simple, if somewhat tedious, means of making this investigation was long ago established by Pettenkofer. It consists of estimating the vitiation of the atmosphere by determining the amount of carbon dioxid it contains, and from this computing the amount of air supplied for ventilation. All air contains carbon dioxid as a normal constituent. The average amount in pure air is commonly stated to be 4 parts in 10,000. This is generally used in ventilation computations, though recent investigation has shown it to be a little too high.

The carbon dioxid in the expired breath averages more than 4 per cent. (400 in 10,000). The amount excreted hourly varies according to age, sex and the degree of bodily activity. In a mixed community of persons at rest it will average about 0.6 cubic feet per person per hour, and the variation will be small.

If there were no ventilation whatever the air of an ordinary railway coach, containing 4,000 cubic feet of space and occupied by 20 people, would have 34 parts of carbon dioxid per 10,000 of air at the end of one hour. This would continue to increase indefinitely in a direct ratio to the time, since carbon dioxid continues to be produced by the respiration of the occupants at a practically constant rate. But no car is air-tight, and the inside

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air is being diluted constantly.

It is plainly impossible to measure directly the amount of air flowing into a car, since it enters at many points and at constantly changing velocities. But the amount of the interchange may be readily computed from the actual amount of carbon dioxid found from time to time by applying the figures given above to a simple mathematical procedure. Suppose a car contains 20 people and its atmosphere is found to have an average of 10 parts of carbon dioxid per 10,000. The incoming fresh air contains 4 parts, hence each person present). The computation is better represented by the general formula:

$$A = v\,p \div (x - N)$$

v — the CO_2 by one person (cubic feet per hour),
p — the number of persons in the room,
x — the proportion of CO_2 in the air of the room,
N — the proportion of CO_2 in the outside air (0.0004),
A — the air-supply to the room (cubic feet per hour).

TABLE I.—SUMMARY OF THE RESULTS OF NUMEROUS TESTS TO DETERMINE THE CONDITION OF THE AIR IN SLEEPING-CARS.
(Normal carbon dioxide in air; 4 parts per 10,000.)

	Ave. No. of people in car.	Carbon dioxide per 10,000 parts of air. Ave.	Min.	Max.	Necessary air to maintain ave. carb. diox. cu. ft. per hr
Cars With Natural Ventilation:					
1. Decks open; doors and windows closed....	15	7.19	3.5	13.0	28,300
2. Ditto, but one or both doors open to vestibule	10	5.40	3.5	8.5	40,700
3. All decks, doors and windows closed	13	8.33	5.5	15.0	18,500
4. In lower berth (A).....	16	8.32	5.0	18.0	1,389 per berth
5. In aisle opposite lower berth (B).....	16	7.32	4.5	10.0	....
6. In upper berth (C).....	21	9.17	4.5	18.5	1,161 per berth
7. In aisle opposite upper berth (D)..... (4 to 7; windows and doors closed.)	21	8.37	6.0	13.0	....
Cars with Exhaust Ventilators:					
8. Decks open; doors and windows closed (day)	13	6.01	4.5	10.0	38,400
9. Ditto; for aisle only (night)	16	6.33	4.5	10.0	41,300
10. One or both doors open to vestibule.....	14	5.50	3.5	9.0	57,900
11. In lower berth (A).....	16	6.96	4.5	13.5	2,027 per berth
12. In aisle opposite lower berth (B).....	16	6.83	4.5	10.0	....
13. In upper berth (C).....	17	6.70	4.5	10.5	2,222 per berth
14. In aisle opposite upper berth (D)..... (11 to 14; windows and doors closed.)	17	5.95	4.5	9.5	....
Berth Tests					per berth
15. Cars with natural vent; lower berth.....	..	8.45	....	....	1,354
16. Upper berth.....	..	8.85	....	....	1,237
17. Cars with exhaust vent; lower berth.....	..	6.51	....	....	2,391
18. Upper berth	..	6.70	....	....	2,222
19. Berth with one person.....	..	7.36	....	....	1,785
20. Berth with two persons.....	..	9.91	....	....	2,027

Note—Observations (A) and (B) and observations (C) and (D) were made at the same level (lower and upper respectively), but on opposite sides of the berth curtains.

the respiratory contamination of the car air is represented by only 6 parts.

The 20 people produce 20 times 0.6 cubic feet, or 12 cubic feet of carbon dioxid per hour. With what amount of air must the 12 cubic feet be diluted so that the air will contain 6 parts of carbon dioxide in 10,000? The simple proportion, 6 : 10,000 :: 12 : ?, gives 20,000 as the answer (or 1,000 cubic feet per hour for

Some 15 or 20 years ago analyses of the air from passenger cars were made by Prof. Nichols, for the Board of Railroad Commissioners of Massachusetts. About the same time the Pennsylvania Railway took up the subject and had a few tests made. In 1894 a committee of the Master Car Builders' Association made a somewhat extensive report on the subject of car ventilation, and with it submitted the

results of several analyses of air from cars (see Table II.).

In 1904, Dudley* reported on analyses of the air of cars of the Pennsylvania Co., which were ventilated by the excellent system which he devised. He found from 10 to 18 parts of carbon dioxid per 10,000 in runnig cars, and 20 to 21 parts in cars standing still for 20 mins. The 52 people in the cars are assumed to have produced 0.72 cubic feet of carbon dioxid each per hour; from which is estimated 26,000 to 62,000 cubic feet of air-supply per hour for the moving and 22,000 to 23,000 for the still cars. More recently the air of cars running in the New York Subway (but more particularly of the subway itself) has been thoroughly studied experimentally by Soper.† Similar studies have been carried out in Paris by Lucien-Groux and others. But these cars have little in common with the railway coach.

In literature on this subject, the information concerning the actual conditions of the air in railway cars is very meagre. It is adequate on the application of ventilating devices, but there is no series of analyses extensive enough on which to base any comprehensive opinion as to the deficiencies of natural ventilation to be overcome, or as to the adequacy of the devices applied in keeping the air of the breathing-zone freed from the products of respiration.

The ventilating device upon which this report is based is designed to remove air by exhaustion from the upper portion of the car, and its opertion is dependent on train motion.‡ Anemometer readings have shown that each such exhaust ventilator will remove an average of about 15,000 cubic feet of air per hour at a train speed of 40 miles per hour, and proportionately more or less for faster or slower speeds. While there is considerable variation under apparently similar conditions, the outward flow is constant. One ventilator is placed over each alternate section of a sleeping-car, while two are applied to the smoking-room and one to the stateroom. Toilet and dressing-rooms are also equipped with one each in recent practice.

It is readily seen that a very large volume of air leaves the car through these openings it must enter somewhere. The question was, does it enter at such places and take such courses as to cause a free dilution of the air at the breathing level in the occupied car? There seems no adequate way to answer this question except by determining the carbon dioxid in such air, from which the amount of dilution may be computed as already indicated. It was desirable also to make determinations in cars not having the exhaust ventilators, but depending upon natural ventilation.

Nearly 3,000 carbon dioxid determinations were made for all purposes in connection with this work; about 2,000 of these weer of the air from over 200 sleeping-cars. A considerable number were made of the air of day coaches, suburban cars, street-cars, stores, restaurants, offices, and the open air for comparative purposes, and others for the purpose of establishing certain facts experimentally.

TABLE II.—COMPARATIVE RESULTS OF TESTS OF CARBON DIOXIDE IN AIR.

Place.	No. of observations.	CO_2, per 10,000			Equiv. hourly air supply per person, cu. ft.
		Ave.	Max.	Min.	
Sleeping cars (body)	294	6.20	10.0	...	2,727
Sleeping cars (berths)	690	6.96	13.5	...	2,027
Day coaches (32 passengers)	43	9.38	21.0	...	1,100
Street cars	45	16.10	29.0	...	541
Elevated cars	17	13.90	26.5	...	674
Suburban coaches	47	14.30	38.0	...	653
Stores	23	8.80	10.0	...	1,250
Restaurants	51	16.10	26.0	...	496
Offices	26	13.91	19.0	...	670
Sleeping cars (12 passengers)	..	18.0	22.0	11.3	M.C.B.
Chair cars (17 passengers)	.	10.7	15.5	7.0	re-
Suburban cars (half-full)	..	13.8	21.7	6.9	port

Before proceeding to an analysis of the finding it is necessary to know the amount of carbon dioxid in the air surrounding trains in order to have some basis for computing air-supplies to cars. The locomotive emits an enormous volume of this gas, which, it is easily conceived, might play a considerable part in the amount of carbon dioxid found in the air of the cars. According to Leissner the air surrounding trains contains from 18 to 22.8 parts carbon dioxid per 10,000. My results are at variance with this; 46 determinations averaged 4.04; the highest was 10, the lowest 3.

It is a matter of ready observation that any lateral wind carries all the smoke from a locomotive stack well out of the path of the following train. Presumably this is true of the invisible gases as well as the visible carbon. When the wind is straight ahead or directly with the train, the smoke and steam are, as a rule, carried high enough by their propulsion from the stack and their heated condition to allow the train to pass under with a clear interval, the heavier particles only, such as the small cinders, falling in its path.

Of course, the smoke and condensed steam do not diffuse as do the invisible gases; but with these is mixed a quantity of sulphur dioxid, for which the sense of smell is very delicate. My observation has been, in the examination of tunnel air, that where flue gases have contaminated the air with 15 to 20 parts of carbon dioxid in 10,000, sulphur dioxid is readily detected. It occasionally happens that sufficient gas is carried into a train running in the open to render sulphur dioxid noticeable. It seems that my determinations of carbon dioxid in the air surrounding trains have not dealt with the conditions that could bring this about. Consequently I conclude that this is a relative rarity, and that 4 in 10,000 is a proper average to deal with in considering the air outside of moving trains.

It was soon observed that a few open windows in a moving train admit such a volume of the surrounding air as to render the respiratory contamination almost undetectable. Ventilation as a problem in furnishing an adequate amount of fresh air then disappears. This is a fact which may be verified easily by directly measuring the rate of flow of air through an open window. I have measured up to 50,000 cubic feet per hour entering through a single side window raised only 6 inches. So we may dismiss the car with open windows from further consideration. And with it the whole subject of summer ventilation, so far as the term "ventilation" refers to supplying air and not to keeping the car closed and turn to the car running in cold weather with windows closed.

Adding to the open deck windows by opening one or both end doors to the vestibule (the outside vestibule doors remaining closed) would be expected to cause a greater air-supply. Such is the case, as shown by the records. [Table I.] Observations were made also where both doors and all the deck sash were closed. Whatever amount of the outside enters the car under these conditions must find it way in through natural crevices and is driven in and out by the pressure of the wind and the suction effects produced by the motion of the train. As would be expected under these conditions, the average carbon dioxid is greater than in either of the preceding groups and the computed air-supply is smaller.

The air-supply to sleeping-cars, as computed from 555 carbon dioxid determinations, is (for all but that of the completely closed car depending upon natural ventilation) a large one relative to the number of passengers, and would not allow the average carbon dioxid to go above 10 in any but this one condition unless the cars were crowded beyond their natural capacity. Such overcrowding in sleeping-cars is prevented by the assignment of space and refusing further applicants when this is all taken. It very rarely happens that sleeping-cars carry more than 25 passengers.

It should be understood that all of the above observations apply to the main compartment of the standard sleeping-car in motion; and in setting down the number of passengers only those persons were counted who were actually in this compartment, and who had been there for a

* "The Passenger Car Ventilation System of the Pennsylvania R. R.," C. B. Dudley.
† "The Air and Ventilation of Railways," Roper, 1888."
‡ The Garland Ventilator, Engr. News, December 22nd, 1898.
[Table I. gives a summary of the authors tables of records of observations in sleeping cars. Table II. shows the comparison of observations made in various place, and includes the figures of the Master Car Builders' Association mentioned above.—Ed.]

period of at least ten minutes at the time the samples of air were being collected. The smoking-room, the drawing-room, and other small rooms constitute separate problems.

In order to test the consistency of the results obtained, and to find if the carbon dioxid actually does go up in proportion to the number of passengers, the 555 observations were divided into four groups, according to the number of passengers (Table III.). It is seen that it increases with the number of passengers:

TABLE III.—RELATION OF AIR POLLUTION TO NUMBER OF PASSENGERS

	—Carb. diox.; parts per 10,000—	
No. of Pass.	Cars with nat. vent.	Cars with exhaust vent
Under 10	6.91	5.58
10 to 15	6.62	5.95
15 to 20	7.38	6.46
Over 20	8.05	7.24
Average	6.89	6.11

A further method of determining the ventilation of the cars equipped with exhaust ventilators was applied as follows: When trains pass through tunnels the cars receive a considerable amount of engine gas. We may compute the fresh air supplied to these cars by observing the rate of disappearance of this gas (carbon dioxid) after leaving the tunnel. Determinations showed considerable irregularity, but the basic conditions also varied, and the final level to which the carbon dioxid was approaching was different for different cars. It is, nevertheless, clear that the disappearance of the gas is rapid.

When taking samples of air from the berths it was the rule to take, as near simultaneously as possible, an average sample from the aisle for comparison. Samples from each place were generally repeated at 15-minute intervals, until 20 or more had been collected in the car. Two lower berths on each side of the car were generally selected, and one or two uppers when possible.

Popular opinion ascribes better ventilation to the upper than to the lower berth in a sleeping-car. The reason generally given in support of this opinion is that the berth curtain entirely covers the lower and only partly the upper. It is supposed that the curtain hinders the progress of air-currents. The tests show that the air contamination is not very different on the two sides of the curtain; but it may be contended that this is a matter of equalization by the diffusion of gases, and that the circulation of fresh air is chiefly through the body of the car.

In order to gain some information concerning the conditions that would obtain if the closed berth had to lose its carbon dioxid by diffusion through the curtain, a series of experiments was conducted with the purpose of determining the rate of diffusion under similar conditions. The results show that the berth does not act as a closed compartment, but is essentially a part of the general space of the car body, and is subject to the effects of air-supply and air-currents through and around the curtain very much as it would be were the curtain entirely absent.

Observations were made in crowded smoking-rooms of cars without ventilators. The occupants were from 4 to 7; the carbon dioxid from 10.5 to 20.5 per 10,000. The average carbon dioxid (14.88), with the average occupants (5.85), would be maintained by an air-supply of 3,225 cubic feet per hour for the room. Similar observations in smoking-rooms equipped with exhaust ventilators showed carbon dioxid from 7 to 16.5 per 10,000, with 4 to 8 occupants. The averages were 6.1 occupants and 11.41 carbon dioxid the equivalent air-supply would be 4,940 cubic feet. No account is taken of the carbon dioxid produced by the burning of tobacco and matches.

About 200 samples of air from still cars have been analyzed. It is usual to find that the carbon dioxid rapidly increases when a train stops running. This increase reaches its maximum only after a considerable time, and the final height is variable, depending largely on the force of the outside wind. A strong wind will drive much air into the car, a light one proportionately less. Among these 200 observations the carbon dioxid passed 20 per 10,000, but twice (20.5 and 21.5), both in lower berths. It is usual to find the maximum around 15 in cars that are occupied at stations awaiting very late departures.

It has been shown that an average of over 40,000 cubic feet of air per hour enters the breathing-zone of sleeping-cars equipped with the type of exhaust ventilator herein considered. It has been further shown that approximately twice this much air leaves from the upper portion

of the car through the six or eight ventilators. In the absence of specific intakes it is difficult to determine exactly in what manner this air finds an entrance.

Sleeping-cars are snugly built; the crevices are small, but no crevice is too small to admit air, provided a little pressure is behind it. A row of windows covers each side of the car, another row of small ones extends along each side at the deck level, and each end has a door. There is a sum total of approximately 500 lin. feet of crevices at their edges. If they average 1.50 inches in width and admit air at half the rate of the train speed, the 40,000 cubic feet would be more than accounted for. Some of these crevices are much larger than assumed, some are probably smaller. It is not unusual to find air entering certain areas of open windows at a rate equal to half the train speed, or even more. The crevices may act in the same way; the passage of air through such invisible openings is a much more important means of ventilation than might be thought. Pettenkofer showed that when all visible chinks were closed in a room the rate of ventilation was decreased only 25 per cent., as compared with the rate when the doors were closed in the ordinary way.

Samples of air were taken simultaneously from various locations in sleeping-cars, with exhaust ventilators and the carbon dioxid determined, in an attempt to find where the contamination is greatest. So long as the samples are taken well within the body of the car they show nearly uniform results for different levels and different locations; hence the general mixing of the air must be good. The carbon dioxid, on the average, is a little less close to the floor than higher up. This is consistent with the upward trend of the flow to the ventilator exits. There is essentially no difference between the breathing zone and the bell-cord level. There is a slight difference between samples taken at the breathing level and near the ventilator exits, the latter being lower; but the difference is not so great as would be indicated by the difference in the dilution of the lower air and the amount leaving the car through these exits.

It has been attempted to determine the ventilation of sleeping-cars in terms of air-supply, using carbon dioxid as the only available basis of computation. In order to pass judgment on the findings recorded, it is necessary to know the hygienic significance of respiratory contamination of the atmosphere, and, if possible, to establish the cause of discomfort which may arise, supposedly as the result of an insufficient air-supply.

According to the older theories the sensations of discomfort arising in enclosed spaces had their origin either in an excess of carbon dioxid or an insufficiency of oxygen. Pettenkofer cast the first serious doubt on the correctness of these theories. Hermans proved that air containing 15 per cent. oxygen may contain 2 to 4 per cent. carbon dioxid and not be harmful. On removing the carbon dioxid there was no great discomfort even when the oxygen was reduced to 10 per cent.

It seems to be established beyond reasonable doubt that discomfort is not due to any change in the chemical composition of the air, but to physical changes only; and that to maintain a normal heat interchange between the body and the air is to avoid the development of those symptoms which are commonly attributed to poor ventilation. A certain amount of fresh air must be supplied, of course, but the most vital element of the ventilation problem becomes that of regulating the temperature of the air. The question of how to ventilate a railway car is therefore chiefly a question of how to regulate its heat.

It has happened that a few of the cars considered in this work have been uncomfortable, have been called "close" or "stuffy." The temperature of these cars has invariably been high. There has sometimes been an unpleasant odor. This cannot be ventilated away so long as its source remains. A high temperature renders such odors more noticeable. The most marked offensiveness I have ever noticed was in a day coach, where the air was of such a degree of chemical purity as to indicate ideal ventilation by any standard that has ever been proposed. The car was hot and had many filthy people in it. On the other hand, with perfect comfort has been associated the highest chemical impurity.

It seems probable, furthermore, that one main cause of the complaint of poor ventilation in the sleeping-car berth is purely psychic. We are used to sleeping-rooms with walls and ceilings far from us. In

the berth they are very close. Their very nearness is oppressive. It seems as if there cannot be enough air in this small space to supply our wants. The sensation is often quite independent of the amount of air supplied and even of the temperature.

Even under the older applied principles of ventilation, the air-supply of sleeping-cars, as determined in this study, is ample under nearly all conditions. The average carbon dioxid in the air of running cars falls well within the limits of contamination permitted by the earlier investigators, and it is relatively rare that the individual observations show more than 10 parts in 10,000. In the light of the newer conceptions, which have as yet been applied in practice only to a very limited extent, this air-supply is ample under all conditions observed. No danger to health is to be apprehended under the conditions ordinarily obtaining even in still cars. They are occupied only for short periods as a rule and are not uncomfortable if kept cool.

It would seem that the results obtained by the type of exhaust ventilator investigated in this study, which is now a part of the standard equipment of Pullman cars, are entirely adequate to meet the demands of hygiene, and that those difficulties and discomforts which do sometimes arise are due to other causes than lack of a sufficient amount of fresh air or to excessive vitiation. It is extremely unlikely that increasing the air-supply, which now amounts to from six to ten or more times the cubic content of the car each hour, and must maintain considerable motion of the atmosphere, would aid in any other way than by making overheating more difficult to bring about.

Overheating is the paramount evil. It is the thing to be chiefly guarded against in the attempt to maintain comfort and good hygiene. It is not feasible to cool the naturally overheated air in summer, or to dry it when excessively humid. Fan motors and open windows are the available means by which the difficulties arising in hot weather may be most readily overcome. Carry away the body heat as rapidly as possible by a strong current of air.

Though the avoidance of overheating in winter would seem to be an easy thing, its accurate control to meet the rapidly changing conditions under which cars may be operated is a matter of great difficulty. Experience has shown that it is necessary to have in sleeping-cars at least twice as much radiating surface as is demanded in common practice for heating the same space in houses; this in order to warm the large volume of air received and discharged so that it will maintain comfort to inactive passengers. To decrease this surface would be to fail to maintain a sufficiently high temperature on occasion.

A system is needed capable of being quickly and effectively controlled to meet rapidly changing conditions. Such a system is now being experimented with in which there are multiple units of radiating surface, each with a separate control. The results so far indicate that from this a more uniformly comfortable condition can be maintained.

STREET DUST AND STREET CLEANING IN RELATION TO HEALTH AND COMFORT AND ECONOMY.

BY J. H. LANDIS, M.D.,

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One of the great problems confronting a city is that of street cleaning. It is of importance because of its relation to public health, because the thoroughness with which it is done adds materially to the comfort of the public, and because the

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cost of maintaining an efficient department means the expenditure of large sums of money.

Gilman Thompson states the composition of street dirt to be as follows:—"First, ashes, house sweepings, etc.; secondly, excreta of horses and dogs voided in the streets to become dried, pulverised, and distributed by winds and traffic; thirdly, irritating powdered asphalt, ground from the surface of pavements and often mixed into a slimy paste with mud, horse dung, and the petroleum drippings from automobiles; fourthly, pulverised earth, plaster, iron, dust, cement, etc., derived from buildings undergoing construction or demolition, and carried about the streets in loosely constructed wagons; filthly, the earth from street excavations usually impregnated with sulphides and other productions from leaking gas mains; sixthly, soot from chimneys; seventhly, garbage, which is frequently overturned in the streets; eighthly, human excreta, which, in crowded tenement districts, is often voided by children or adults in blind dark alleys and ill-lighted streets. In general, street dust contains particles which form mechanical irritants, organic matter, both animal and vegetable, of numerous and widely different conditions and character."

The sources he gives as follows:—(1) That due to the accumulation of the filth and refuse of the streets; (2) that swept from the soil by winds; (3) that from chimneys and smokestacks; (4) desiccated human sputum.

One glance at this rather incomplete list of the constituents of ordinary street dust cannot but create a feeling of alarm in the minds of trained sanitarians as to the possible results on health. It is a well-known fact that an epidemic of acute catarrhal affections of the respiratory tract can be predicted with certainty within a week following a period of high winds in dry weather. This source of infection is so well known that it is not uncommon to hear patients predict such an epidemic. They do not, as a rule, know the exact cause, but can predict the result with accuracy. When one considers the variety of infectious germs that are thus disseminated by the air, the question of street dust in its relation to public health begins to assume great importance.

Human sputum is doubtless the most important source of street dust from a public health standpoint, and deserves special consideration. It is generally conceded that the cause of tuberculosis, pneumonia, influenza, and diphtheria is to be found in the discharges from the lungs, nose, and throat of those affected; that the poisonous germs causing tonsilitis, pharyngitis, bronchitis, and acute affections of the nose are transmitted through the discharges from the affected organs, and that scarlet fever, whooping cough, and measles are also disseminated through the medium of infected discharges. Moisture and organic matter furnish the conditions necessary for the life of these germs. Ordinary road dust contains over 10 per cent. of water, and the droppings from animals furnish the necessary organic matter.

Numerous experiments prove the resistance to external influences enjoyed by most pathogenic bacteria. Buchner found the tubercle bacillus in an active state in the dust of a room a year after the death of the occupant from consumption. While it is admitted that the conditions favoring continued existence are not ideal in the street, exposed as it is to the direct rays of the sun and to oxidation, there can be no doubt that occasional infection does occur from this source. The typhoid bacillus has a low degree of resistance when exposed to drying and the direct rays of the sun. Its dissemination through the air on dust particles is conceded to be very doubtful; yet this method of dissemination was regarded as probable by the commission appointed to inquire into the prevalence of typhoid fever among our troops stationed at Chicamauga during the Spanish-American War.

This conclusion is not justified by the research work of Germano, who found that typhoid germs "could not live in dust sufficiently dry to be disseminated by air currents." He found that the diphtheria bacillus resisted drying even when the process was assisted by the use of sulphuric acid, and that the germ retained its virulence up to the time of dying. On this experiment he based his belief that the disease might be disseminated in dust, and, while in the great majority of cases direct contact either with persons or articles of common use is the method of transmission, it is well to bear in mind the possibility of infection through dust. He

found the organism causing pneumonia, and those causing the various forms of streptococcemic infection, to possess a high resisting power to drying, and concluded that they might be transmitted through the air on dust particles. His experiments with the diplococcus of cerebro-spinal meningitis led him to the conclusion that it might, without difficulty, be disseminated in the form of dust. Dr. E. W. Hope (Harrington's "Practical Hygiene") has apparently demonstrated that the dust of cities and large towns is responsible for the spread of infantile diarrhœa.

He presents evidence of the association of rainfall and its attendant cleansing of the atmosphere with diminished mortality from choleraic diarrhœa. The return shows the rainfall for June to September in each year, and the last column shows the annual average of deaths from diarrhœa during the third quarter of the year:—

Period.	Average rainfall.	Conditions.	
Six years.....	13.8in.	Av. wet summer..	373
Fourteen years..	10.9in.	Av. dry summer..	573
Extreme years—			
1891.....	16in.	Wettest summer..	203
1895.....	7.7in.	Driest summer....	819

While we should be slow in accepting the single factor dust as explaining the above mortality rates, one can hardly help but feel that Dr. Hope has constructed an almost faultless case of circumstantial evidence. The relationship existing between the dried, pulverised excreta of dogs disseminated with street dust and public health cannot be determined, but there is no reason to believe that its presence in the atmosphere can be anything but harmful. Ocular evidence of such pollution is to be found on all sides, and during a recent trip through one of the streets of a neighboring city such evidence was found no less than twenty-one times on one side of a single city square. The germs of tetanus and malignant œdema are pretty generally present in ordinary road dust, and the increased number of cases of tetanus in England during the past few years has been attributed to the increased amount of dust caused by the automobile.

Thompson expresses the belief that nine-tenths of the acute inhalation diseases and chronic catarrhal diseases are due to dirt inhalation. If this be true, or even one-half true, the enormous importance of the relationship existing between street dust and public health at once becomes manifest, and the "extent to which street dust is contaminated with disease-bearing germs must depend largely upon the hygienic precautions exercised in a community." It must not be forgotten that street dust acts elsewhere than in the open air. Street dust and water make a more or less tenacious mud, and this, carried into the home, soon loses its water and becomes dust again.

Still another method of infection is through the exposure in stores, markets, and on sidewalks of meats, fish, fruits, and vegetables. Meats and fish furnish an ideal culture field for bacteria, and it requires no stretch of the imagination to see in foods so exposed actively growing fields of pathogenic and other organisms. "Sedgwick has shown that 10 litres of air taken 5 ft. above the surface of a macadamised street in a dust storm contains as many as 200,000 micro-organisms."

It is hardly necessary to refer to its influence upon the comfort of the public. During high winds it is blown about in clouds. It is raised by all kinds of mechanical violence and by the passage of vehicles, especially automobiles. It gets into our eyes, and may produce irritation of the conjunctiva. It covers the body and clothing, and damages fabrics in homes and stores. City life, in homes on macadamised streets especially, is made almost unbearable in the late spring and through summer and fall by the constant dust raised by passing automobiles. At a season of the year when life in the open offers the greatest degree of comfort and pleasure, this plague of dust drives one inside behind closed windows and doors. The immediate discomfort may be merely the first step in conditions which may not only produce still greater discomfort, but even threaten the health or life of those exposed. Among the pathological results which may follow are naso-pharyngeal irritations leading to acute or chronic disease of the frontal sinus, the middle ear or the antrum of Highmore; to pharyngitis, tonsilitis, laryngitis, or bronchitis, or it may "predispose to more serious diseases, such as consumption or pneumonia."

The cost of street dust cannot be determined by the cost of street cleaning. The immediate cost can be determined by the reports of the street cleaning department

of a great city. The remote cost must take into consideration the economic loss, due to sickness, the potential value of the lives lost, and the deterioration in value of merchandise damaged or actually destroyed. For every life lost through the acute infections contracted through this source, we may charge $5,000. For every life lost through consumption, so contracted, can be charged $8,000. It has been estimated that the merchants of Chicago lose through smoke and dust a sum of money equal to the annual tax collected in that city.

It is not correct to charge this loss to the merchants, for in fixing a selling price for their goods it is loaded to cover this loss and is paid by the public. The cost for the street sewer and catch basin cleaning of Cincinnati for 1909 was, in round numbers, $111,000. If it were possible to add to this the cost in lives, sickness, and merchandise of various kinds due to street dust, the ultimate cost would be appalling.

A few words as to how the problem could be handled and the public health and wealth conserved. Treating with oil has practically eliminated the nuisance on macadamized streets and gravel roads. One has but to make a short trip through the country on alternating oil-treated and ordinary stretches of pike to see the wonders worked by oil. On the oil-treated portion hardly enough dust is raised to be visible; on an ordinary pike the passing vehicle, especially if it be an automobile, leaves a thick cloud of dust. Streets paved with asphalt, bitulithic stone, brick, or wood block, if not frequently flushed, are almost as bad as a gravel road. Frequent sprinkling lays the dust and converts it into mud, another nuisance second only to dust. The presence of the so-called white wing force is effective on the streets where they are employed, but their employment on all streets is prohibitive on account of the cost. Flushing is effective on the proper streets, but cannot be employed on any but paved streets.

Sweeping by hand or machine leaves much to be desired. In Germany, it is claimed that the problem has been solved by the use of pneumatic cleaners, which act much as do pneumatic house-cleaning machines. A point in the problem, and the most important one from the standpoint of public health, is now being discussed, and promises much in the way of relief. I refer to the use of disinfectants or antiseptics in the water used in street sprinklers and flushing machines. At a nominal cost the water can be treated so that it quickly destroys pathogenic and other organisms. It is probable that this feature of street cleaning will be developed along practical lines, and that street dust will soon cease to occupy the important position in relation to public health which it does to-day.

Editorial

Programme for Canadian Public Health Association Congress.

The program for this year's C. P. H. A. Congress, in the carrying out of which it is anticipated a large gathering will take part, is a noteworthy one from every standpoint; covering three days, December 13th, 14th and 15th. It commences on the first of these days, Wednesday, at 10 a.m. with the general business meeting, with the adoption of a carefully prepared constitution, the registration of old and new members and the meeting of special committees.

At 2 p.m. on Wednesday, the 13th, comes the first general session at which papers of great interest will be read, including "Military Aspect of Sanation," by Col. Carleton Jones, Director General, Medical Services, Ottawa; "Duties of Authorities and private Citizens Towards Consumption," by Dr. C. J. Fagan, Provincial Health Officer of British Columbia; "Medical Inspection and Care of Immigrants on Ship Board," by Dr. J. D. Pagé, Medical Superintendent, Immigration Hospital, Quebec; "Conservation of Food by Cold," by Dr. P. H. Bryce, Chief Medical Officer, Department of the Interior for Canada; "Cheese Factory and Farm Well Waters," by Dr. W. T. Connell, Professor of Bacteriology at Queens University; "Factors in the Spread of Acute Intestinal Epidemics," by Dr. W. H. Hill, Director, Epidemiological Division, State Board of Health of Minnesota; "Municipalization of Milk Supplies," by Dr. W. A. Evans of Chicago; "Hygiene of Canadian Waterways," by Dr. William Oldright, Emeritus Professor of Hygiene, University of Toronto; Dr. F. Montizambert, Director General of Public Health for Canada; Dr. John G. Rutherford, Veterinary General and Live Stock Commissioner, and others prominent in the public health field will read papers, the opportuneness and importance of which cannot here be detailed.

The official opening of the Convention at the Royal Victoria College, Sherbrooke St. by the Patron, Field Marshal, His Royal Highness, Prince Arthur, Duke of Connaught, Governor General, will take place at 8.30 in the evening of the first day; the opening proceedings will be further honored by an address from the Hon. R. L. Borden, Premier of Canada, and addresses of welcome from the Hon. Sir Lomer Gouin, Premier of Quebec, and His Worship the Mayor of Montreal, to be followed by the address of the President, T. A. Starkey, M.D., D.P.H., F.R.S.I., M.R.C.S., etc., Professor of Hygiene at McGill University.

On Thursday the 14th, the meetings of sections will commence at 10 a.m., with that of the Medical Officers of Health. Dr. Louis Laberge, Medical Health Officer for Montreal, Convenor, has arranged an excellent series of papers; the speakers in this section including health officers of the several leading municipalities throughout Canada. The section of Laboratory Workers follows, and Dr. J. A. Amyot, Professor of Hygiene in the University of Toronto, has for this section completed arrangements in his usually efficient manner, a number of the papers here will deal with debatable points of much interest.

The third section meeting on the morning of the 14th, will be that of Sanitary Engineers and Architects, under the experienced direction of T. Aird Murray, M.Can. Soc.E., Toronto. Mr. Murray has arranged that papers be read in this section by prominent engineers and architects; the subjects including "Garbage Removal and Destruction," "Chlorination of North Toronto Water Supply," "Gravity Mechanical Filtration at Saskatoon," "Water Supply by Air Tank Pressure for Small Towns," "Mistakes to be Guarded Against in Water and Sewerage Systems for Towns," "Natural Ventilation as Applied to Private Houses." Mr. Murray himself will display certain excellent lantern views

of the Lethbridge sewerage disposal system.

For Social Workers, section four, Mrs. Grace Ritchie England, M.D., of Montreal, has secured the co-operation of Dr. C. Blackader, Professor of Pediatrics, McGill University; Dr. G. J. Adami, Professor of Pathology; Miss Helen MacMurchy, M.D., Toronto; T. A. Sherrard, of Westmount, who will speak on "Citizenship in Connection with Public Health"; Mrs. Smillie, of Westmount; and Miss Ellen Babbitt of the Russel Sage Foundation, whose paper will not only be of national, but of international interest.

At 2.30 p.m. on Thursday, the 14th, the second general session will take place. Here the symposium on Town Planning and Housing will deal with vitally important matters connected with this subject. Among well-known leaders of thought in this direction, we note the names of Dr. Charles A. Hodgetts, Dr. J. E. Laberge, Architect Ricksun, A. Outhet, W. D. Lightall, K.C., and Architects Percy E. Knox and Colborne P. Merdith.

The annual dinner of the Association for the members, delegates and ladies accompanying them takes place at 8 p.m., Thursday.

On Friday, the 15th, in the final general session, comes the symposium on Bilogical Sewerage Disposal with papers by prominent scientists, including Willis Chapman, T. Aird Murray, H. W. Hill, P. H. Bryce, George G. Nasmith, J. O. Meadows, J. A. Amyot, and T. A. Starkey.

At 12 noon of this day, the business meeting and election of officers takes place; at 2.30 p.m., the meeting of the new executive council, and in the evening a farewell supper.

With the co-operation of Dr. F. C. Douglas, Secretary of the Committee on Local Arrangements, the prominent hotels of Montreal, some of which are advertising in this number of the Journal, have made suitable arrangements to accommodate members and delegates. Arrangements have also been made with all transportation companies regarding reduced rates of fare, in view of which the members and delegates are requested to obtain standard certificates from their local passenger agents when purchasing tickets to the Convention.

The Coming Report of the Ontario Registrar-General.

What the frivolous call "The hatches, matches and dispatches record" for the Province of Ontario for 1910, which has been compiled by the Registrar-General's Department, contains some interesting figures with regard to the vital statistics of the Province. The Report is in the hands of the printers, and will not be ready for the public for some weeks yet.

During the year there were 55,871 births; 24,036 marriages, and 33,539 deaths; or 24.9, 10.7, and 14 per 1,000 of the estimated population respectively for the County Municipalities of the Province (including cities and towns). For the 18 cities the figures are: births, 18,767, or 32.2 per 1,000; marriages, 11,793, or 20.2 per 1,000; and deaths, 12,303, or 21.1 per 1,000. The towns of 5,000 population and over are 15 in number, and their statistics are as follows: births, 2,918, ratio 21.6; marriages, 1,405, ratio 10.4; deaths, 1,109, ratio, 14.7.

Of the 33,539 deaths, there were 706 from typhoid fever; 2,287 from tuberculosis in all forms, as against 2,380 in 1909. Cancer was the cause of death in 1,077 cases; 222 died from diabetes; 327 from anaemia; 355 meningitis; 923 apoplexy; 2,240 organic heart trouble; 464 bronchopneumonia; 1,458 pneumonia. Diarrhœa among infants under two years of age was fatal in 1,374 cases, while 2,455 died when under four months of age, owing to weakness from birth or ignorance on the part of the mothers with regard to the care of children. In 284 cases women lost their lives in child-birth. Of the 1,626 deaths from affections produced by external causes, 91 persons took their lives by various methods, hanging being the favorite; 26.3 per cent. of this number selecting this means of exit from a weary world. 95 persons were poisoned accidentally; 43 were burned to death; 112 died from burns received; 33 died from gas poisoning; 266 were drowned; 64 shot accidentally; 309 killed by motor cars, landslides, steam and electric railways, etc.; 13 were frozen to death; 8 died from effects of heat, sunstroke; 11 killed by lightning; 18 by electric shock; 17 homicides took place, and the balance, 645, died from various accidental causes. Old age was the cause of death of 3,429 persons. 2,207 were stillborn.

With regard to mortality among infants, it is found that among those under five years of age, 6,649 died under one year of age; 917, one year old; 424 two years old; 321 three years old; and 247 four years old.

March was the favorite month for births; there being 5,663 in that month. Of the children born throughout the year, 28,664 were males and 27,207 were females. There were 370 pairs of twins, 264 boys and 376 girls. Triplets surprised the happy father in five cases, 9 boys and 6 girls.

June continues to hold favor with the bride. Of the 24,036 marriages, 3,555 were celebrated in the happy month. September and December followed in the order named with 2,653 and 2,304 respectively.

There are two periods in a woman's life when friends are vastly interested in her age; when she marries and when she dies. The Report goes rather deeply into some of these figures, and while all the secrets are not disclosed, yet there is some interesting information in its pages.

With regard to the age at which persons marry, it is of interest to learn that, so far as Ontario is concerned, men do not marry, to any great extent, at a later date than women, although it is popularly thought otherwise. Last year 8,168 grooms, or about one-third of the total number of men, married between the ages of 20 and 24, while 47 per cent., or nearly one-half the women who entered the bonds of matrimony, were between those ages. With both sexes the next greater number were in the 25-29 group, and then come the 30-34 for the grooms and 15-19for the brides. Under the age of 20, 453 men were married; one taking a bride in the 30-34 group; one selecting a lady whose age comes in the 35-39 class; one married a lady of the discreet age of 70, while two grooms showed a predilection for the same maturity of their brides. Fifteen women between the ages of 15 and 19 married men between 40-44; two became brides of men between 45-49; one married a man over 55; two, men over 60, and one a man over 70, as did also a lady of 25-29.

Cupid drives his bolt athwart denomination and conventions. Just at the present time the question of mixed marriages is holding a certain amount of public attention, but many of the good people who discuss the matter of persons of different faiths marrying will be surprised to learn to what an extent such marriages are contracted in Ontario. It appears that in one year alone Methodists married Roman Catholics; Jews married Gentiles, while in many cases May wedded December. Out of the total of 7,851 Roman Catholics, no less than 1,509 married out of their denomination. Of the grooms, 665 married non-Catholic brides, and 844 professed Catholic girls became brides of non-Catholic grooms. Of these marriages, the larger number were between Catholics and Anglicans; then came Methodists, Presbyterians, Baptists, Lutherans, in the order named, but, rather strangely, no marriage between a Roman Catholic and a member of the Salvation Army is recorded, yet two married Jewesses, and five brides threw in their fate with as many Jews. The Jewish ladies did not show such a variety of taste, but exhibited a strong Anglican leaning, for, of the seven who married out of their faith, five married Anglicans and two Roman Catholic husbands.

Analysing the table still further, it appears that 631 Presbyterian ladies married Anglicans; 841, Methodists; 126, Roman Catholics; 41, Congregationalists, 55, Lutherans; and the collection of 74 are not classified. Of the Methodist ladies, 678 married Anglicans; 910, Presbyterians; 157, Roman Catholics; 290, Baptists; 57, Congregationalists; 83, Lutherans, and 6 passed into the care of as many Salvationists, while 98 of their husbands have yet to be gathered into any particular fold which finds a place in the table; 25 frankly confessing to being of no denomination at all. Roman Catholics have already been largely dealt with and, coming to the Baptists, it is found that 200 chose their husbands from the Anglicans; 219 from the Presbyterians; 362 selected Methodists; 65, Roman Catholics; 21, Congregationalists; 26, Lutherans; 28, from the untabulated, and six of the gentlemen were unattached denominationally. Fifty-seven Lutherans sought and got Anglican husbands; 71, Presbyterians; 78, Methodists; 85, Roman Catholics; one Hebrew and one Salvationist. Altogether, 87 Salvationists found their husbands in "the Army"; three married Anglicans; one, a Presbyterian; seven, Methodists; five, Baptists, and one is unclaimed.

BOOK REVIEWS

"Lippincott's New Medical Dictionary," "The Essentials of Food," "Aids to the Analysis of Foods and Drugs," "Aids to Bacteriology," "Makers of Man," "Old Age Deferred," "The Fourth Physician," "First Aid Charts," "What a Young Boy Ought to Know," "What a Young Man Ought to Know," "What a Young Husband Ought to Know," "What a Man of 45 Ought to Know," "What a Young Girl Ought to Know," "What a Young Woman Ought to Know," "What a Young Wife Ought to Know," "What a Woman of 45 Ought to Know."

"Lippincott's New Medical Dictionary."

Lippincott's New Medical Dictionary is beautifully bound in flexible leather, with thumb index and fully illustrated. Its value is corroborated by the demand for a reprint edition, and a new edition in less than a year from the date of its original issue. In this new edition over 5,000 additions and changes have been made in the text, seventy-one new illustrations have been added, and about 500 new words have been inserted, many of which appear for the first time in any dictionary. The author's aim is to furnish the medical student, the practitioner of medicine, the laboratory worker, and whoever else has occasion to use a medical dictionary with a single volume of moderate compass and at a reasonable price, which shall attain the ideals of the user in regard to thoroughness, accuracy, perspective and proportion; and this aim has been fully accomplished.

Condensation has been attained by the omission of unessentials, and in addition words having a same etomological element are usually grouped together; otherwise the arrangement of words throughout is strictly alphabetical. The etomologies are adequately attended to, and in the orthography the author has rightly leaned somewhat to conservatism. A good feature of the work is the cross references.—*Lippincott's New Medical Dictionary. A vocabulary of the terms used in medicine, dentistry, veterinary medicine and allied science, with their pronounciation, etomology and signification, including much collateral information of a descriptive character. By Henry W. Cattell, A.M. (Laf.), M.D. (U. of P.), Editor of International Clinics, Fellow of the College of Physicians of Philadelphia, etc. Freely illustrated with figures in the text...Second edition. Philadelphia and London: J. B. Lippincott Company; Canadian agent, Mr. Chas. Roberts, 608 Lindsay Bldg., Montreal.*

"The Essentials of Food."

Written in simple language and appealing to the medical profession and laity alike, "The Essentials of Food" is a useful little work. It is intended to be a correct summary of present day knowledge regarding foods.

The author points out that there are five words signifying nutrients, and considers his subjects under classes so indicated, viz.: water, proteids, starches, fats and minerals. Dr. Stewart acknowledges his debt and the debt of all who have investigated the question of foods, to Professor William Crittenden, Director of the Scientific School of Physiology in Yale University; and he believes that it is to the credit of vegetarians that they have amply shown that much less flesh food is an advantage to the health of man, and quotes Dr. Pavey, a distinguished author and physician of the past generation in saying, among other things, that were it not for the temptation to exceed, induced by the refinement of the culinary art, the physician's aid would be much more rarely required. The little book is fully indexed and well printed.—*The Essentials of Food. By Donald Stewart, M.D., London: John Bale Sons and Danielson, Limited, Oxford House, 83-91 Gt. Titchfield St., Oxford St., W., 1911. Price 3/6 net.*

"Aids to the Analysis of Food and Drugs."

This is a volume in the Student's Aid

Series of Bailliere, Tindall and Cox, and fully reaches the high standard set by other volumes in the series. The work is not only useful from the standpoint of accuracy and the amount of information it contains, but from the fact of its moderate size, and that it is apparently the only book that has recently appeared, devoted to the analysis in condensed form of foods and drugs. The work concludes with valuable appendices and a full index.—*Aids to the Analysis of Food and Drugs. By C. G. Moor, M.A. (Cantab.) F.I.C., and William Partridge, F.I.C., 3rd edition. Students' Aid Series. 249 pages. London: Bailliere, Tindall and Cox, 8 Henrietta St., Covent Garden. Toronto: The J. F. Hartz Co., Limited. Obtainable from any bookseller... Price 3/6 net.*

"Aids to Bacteriology."

"Aids to Bacteriology" is a companion volume in the Students' Aid Series to "Aids to the Analysis of Food and Drugs." The author points out in his prefatory remarks that public health authorities, water works companies, agriculturists manufacturers generally do not efficiently appreciate the advantages to be derived from bacteriological investigations, but that a similar criticism with respect to the general medical practitioners can no longer be made. The work is written under twenty-two chapter headings, followed by appendices and an index, and containing valuable tables throughout. Among the chapters are those dealing with Bacteriological Apparatus, the Preparation and use of Nutrient Media; Microscopic Examinations of Bacteria; Diseases of Questionable Origin; The Bacteriology of Sewage, Shellfish, Meat, Soil, Air and Milk; and, The Bacteriology of Water.—*Aids to Bacteriology. By C. G. Moor, M.A. (Cantab.) F.I.C., and William Partridge, F.I.C. Second edition Students' Aid Series. London: Bailliere, Tindall and Cox, 8 Henrietta St., Covent Garden. Toronto: The J. F. Hartz Co., Limited. Obtainable through any bookseller. 1911. 3/6 net.*

"Makers of Man."

A clever book, searching the borderland of the unknown and treating the lives of forty individuals as pyschological overtones—a harmony in immortality with predestination as its motif; this is "Makers of Man."

There are one or two postulates in "Makers of Man" that may be questioned by the reader, but, on a whole, the book is one of the most instructive and entertaining it has been the reviewer's pleasure to come across. The author points out that in the psychological treatment of his subjects their physicial organisms are, from this point of view, to be regarded, not as mere animated "matter," but each one as the organized experience, a phychoids, the sub-conscious and superconscious factors of which all play their parts in contributing to the feeling tone, modifying the opinions or determining the motives of conduct. "What presents itself on the physical side a newly perfected neuro-muscular system, is on the psychical side a newly established habit." Further, "What happens at the synapses is not the generation, but rather the intensification of a pre-existence, the concentration of a diffused consciousness." And again, "Life is a torch which is never extinguished, but is handed on from one generation to another, with all its established potencies intact."

Concluding his introductory remarks, Dr. Whithy points out that "cerebral growth and organization are one aspect of character and a most important one, but the most essential is its manifestation as human thought and action, and the ideal significance of these; this epitomizes Dr. Whitby's subject. He divides greatness into four types for the purposes of discussion, the practical, aesthetic, intellectual and ethical, he considers the practical type or the man of action first, because, on the whole, the simplest and most primitive. In this class are included Caesar, Charlemagne, Richelieu, Cromwell, Napoleon Bonaparte, etc. Then he takes up the aesthetic type, the type pre-occupied with ideals, such as Dante, Leonard Da Vinci, Titian, and Goethe.

The third type, the intellectual, the author divides into two groups, the philosophers and the scientific discoverers. In this type he deals in a very interesting manner with the lives of Spinoza, Bacon, Galileo, Harvey, Descartes, Hegel, Darwin, and others.

The fourth type, Dr. Whithy considers the highest and most humanly significant, this type being called for want of a better

name, the ethical tpye, and including the consideration of the lives of Christ, Marcus Aurelius, Mahomet, Luther, Emerson, Renan.

Power in the crucible is considered in two noteworthy chapters. The first of these, chapter X., deals with Danger and Solitude—Solitude as a means of Power; and the second, chapter XI., the Classification of Sexual Types, Ambiguities, Need of Attachments, Woman in Relation to Man's Ideals, Sexual Versatility of Genius, the Higher Monogamy. In this section, one of the questionable points above referred to is the author's statement that all ethical ideals are ultimately traceable to the precepts and examples of what the world has agreed to regard as pre-eminent individuals, in so far, at least, as they are not mere products of social expediency and use and want.

"The demorilization of a *demigod*," says Dr. Whitby, "becomes intelligible when we learn that destiny has united him to a worldling and a scold"; but he qualifies this statement by saying that in every woman worth her salt, there is somewhere hidden a worldling and a scold. "It is a question of degrees; the tenderness may be veiled, but must not be eclipsed." Then what of this? "The transition from devil to angel is for woman the work of an instant. Paradox incarnate; the infliction of unendurable pain is often her veiled tribute to qualities beyond her comprehension, but not beyond her worship; is often the prelude to her most entrancing mood."

Dr. Whitby does not forget the criminal side of greatness; and here we find not the least of the sections that make the book most worthy of a place on our library shelves.—*Makers of Man. A Study of Human Initiative. By Charles J. Whitby, M.D. (Cantab.), With 47 half-tone and other plates. 424 pages. Full index. New York: Rebman Company, 1123 Broadway. Cloth, $3.00.*

"Old Age Deferred."

Commencing his treatise on the causes of old age and its postponement by hygienic and therapeutic measures, Dr. Arnold Lorand, Carlsbad, Austria, quotes Seneca in saying that man does not die; he kills himself. Dr. Lorand introduces his subject by saying that, while it is still impossible for us to create a young man out of an old one, it is quite within the bounds of possibility, to prolong our term of youthfulness for ten or twenty years; he enters very fully into the question of ductless glands in order to point out the marvellous influence they exert upon the various vital functions, paying particular attention to the thyroid and sexual glands which are carefully studied anatomically, histologically, experimentally and clinically.

The chapter headings will give one an idea of the value of the book. There are forty-eight chapters, as follows: On the Appearance of Symptoms of Old Age in Young Persons; On the Agencies which Govern Immunity Against Infections and Intoxications—The Origin of Fever; On the Agencies that Govern the Conditions of the Nervous System and Mentality; On the Influence of the Sexual Glands upon Vitality and Long Life; On Heredity and Longevity; On Means which can Help us to Determine the Probable Duration of Life; On the Causation of Old Age; The Rational Prevention of Premature Old Age and the Treatment of Old Age; The Destruction and Elimination of Toxic Products from the Body and Hygienic Measures for the Improvement of these functions; On the Destruction of Poisonous Products through the Thyroid and Parathyroid Glands; Hygiene of the Thyroid Gland; The Destruction of Toxic Products by the Liver and the Improvement of its Protective Functions; The Hygiene of the Liver; On the Destruction of Toxic Products by the Adrenals; Hygiene of the Adrenals and of the Circulatory System; A Few Remarks on the Cause, Prevention, and Treatment of Arteriosclerosis; The Elimination of Toxic Products Through the Intestines and the Improvement of this Function; On the Prevention and Treatment of Habitual Constitpation; Hygiene of the Intestines. A Few Remarks on the Cause and Prevention of Apendicitis; On the Elimination of Toxic Products Through the Kidneys; Hygiene of the Kidneys, and the Prevention of Renal Disease; On the Elimination of Toxic Products through the Skin; The Hygiene of the Skin—Air Baths; On Rational Clothing; Improved Hygiene of the Skin and Kidneys through Bathing; Foot Baths; Hygiene of the Skin and Kidneys by Means of Perspiration; On Exercise, Swedish Gymnastics, Massage,

Sport, and Walking and Running Exercises; A Few Remarks on Cold Feet—Their Cause and Treatment; On the Benefits of Sunlight; On the Advantages of an Open Air Life and of Breathing Exercises; On the Dangers of Living in Confined and Ill-ventilated Quarters; Hygiene of Artificial Heating—The Dangers of Heat by Steam, and a Few Hints About their Prevention, Food Hygiene, General Remarks; On Proteid Food, Animal Food, Meat, Fish, Eggs, Milk, etc.; On Carbohydrates and Fats, and the Great Advantages of Vegetables and Fruit; On the Advantages and Disadvantages of a Vegetarian Diet; On the Dangers of a too Abundant Meat Diet; A Few Hints on the Dietetics of Meat; On the Great Advantages of Much Milk in the Diet for the Prevention and Treatment of Old Age; On Blood as an Article of Food Containing Iron and Animal Extracts—Sausages and Blood Puddings; Some Remarks on the Hygiene of Eating—How to Obtain an Appetite; On Mastication; On the Uses of Small Doses, and the Deleterious Action of Large Quantities of Alcohol; Some Remarks on the Causes and Prevention of the Alcohol Habit; On Other Stimulants—Tea, Coffee, Cocoa, Tobacco—Their Merits and Disadvantages; On Sleep and its Importance in Ridding the Body of Toxic Products; On the Causation of Sleep, Sleepiness and Insomnia; Hygiene of Sleep; Prevention of Insomnia; The Treatment of Sleepiness and Insomnia; Hygiene of the Sexual Glands; The Dangers of Sexual Over-activity and of Total Sexual Abstinence; On Married Life as an Important Means for Prolonging Life; Hygiene of the Mind-emotions and Worry as Cause of Old Age; Hygiene of the Mind; Religious Belief as a Means of Prolonging Life: Disease Considered as a Self-defense of Nature; Hygiene of the Mind; Advice to Brain Workers; On the Prevention of Premature Old Age, and the Treatment of Old Age, Through Certain Drugs—Arsenic, Iron and Iodides; On the Prevention of Premature Old Age, and on the Treatment of Old Age by Animal Extracts; A Few Hints on Youthful Appearance; The "Twelve Commandments" for the Preservation of Youth, and the Attainment of a Green Old Age.—*Old Age Deferred; The Causes of Old Age, and its Postponement by Hygienic and Therapeutic Measures. By Arnold Lorand, M.D., Carlsbad, Austria. Third Edition, translated by the author from the third German edition. 460 pages. Philadelphia: F. A. Davis Company, Publishers, 1911. Cloth, $2.50.*

"The Fourth Physician."

A book that appeals to one from sentimental standpoints, an excellent volume for the office table, is "The Fourth Physician," by Montgomery Pickett. It is a holiday story of a new and distinctive type, displaying to the reader the aspirations and ambitions of a young physician and his advance from the coldness of scientific deduction to the warmth of the Christmas spirit. It is based on a play which won first prize over eleven hundred others submitted in a recent contest. The book is beautifully printed and well illustrated.—*"The Fourth Physician," by Montgomery Pickett. Illustrated in color. Chicago: A. C. McClurg and Co., Publishers. For sale at all bookstores. $1.00 net.*

"First Aid Charts."

Dr. Ibotson has succeeded in producing charts under the names of "Emergencies, Accidents and Poisoning," "Fractures, Dislocations, and Sprains," "Wounds and Hemorrhage," "Insensibility or Unconsciousness," which will be very useful, not only to the student, but to the physician in practice, and to hospitals in general.—*"First Aid Charts," by Edward C. B Ibotson, M.B., B.S. Bristol: John Wright and Sons, Limited. London: Simpkin, Marshall, Hamilton, Kent and Co., Limited. Procurable from all medical booksellers. 6d. each, or 1/6 per set of four.*

"What a Young Boy Ought to Know."

This is the revised edition of a little book that is just what its title indicates. In his "Foreword to Parents," the author declares that information concerning the origin of life should reach the child through its parents. Realizing how few parents know how to present this difficult and delicate subject in a proper manner to the mind of an inquiring child, the author sets forth the entire subject in such a form that parents may present the thought in their own language, read suitable parts, or place the little book in the hands of the growing

boy as the judgment of the parent may determine. The whole subject of the perpetuation of life among plants, fishes, birds and animals is set forth in a manner as delicate and interesting as it is scientific and satisfactory to both parent and child. Children should not and would not be left to learn these truths from vicious companions if parents only knew of the better way here made so plain and easy. The author has produced a work which has been so prized, that already it has been translated into fourteen different languages in Europe and Asia; and the entire series, which includes also books to men, young and old, has attained a circulation of over a million copies.—*What a Young Boy Ought to Know. Revised Edition, by Sylvanus Stall, D.D. 193 pp., cloth, $1.00, net; William Briggs, 33 Richmond St. W., Toronto, Ontario, Canada.*

"What a Young Man Ought to Know."

The circulation of Stall's Books, which have gone through large editions in the English-speaking world and have also been issued in the languages of many European and Asiatic countries, is the best tribute that can be paid to their intrinsic worth and to the importance of the message of their author.

In this series of books, "What a Young Man Ought to Know," has proven most popular. The enthusiasm of Dr. Stall's words in this book has saved many of our youth from an ignorant and debased manhood. Into the chapters of this revised edition, printed in clear cut type, Dr. Sylvanus Stall puts the mature wisdom gained from confidential correspondence and personal contact with young men, and from studious research into the latest medical literature. It is a book that is worth placing in the hands of every young man over eighteen years of age.—*"What a Young Man Ought to Know" (Revised Edition)—By Sylvanus Stall, D.D.; William Briggs, 33 Richmond St. W., Toronto, Ontario, Canada. Price, $1.00.*

"What a Young Husband Ought to Know."

If marriage is a divine institution, if the tenderest and most sacred relations of life cluster about the family and the home, then no words of praise can be too strong with which to commend this book. Its author shows himself capable. Its paragraphs are candid and clean. In these pages the author lifts the relations of married life out of the impure thinking which degrade manhood and womanhood and rob marriage and home of blessing and happiness. It treats of matters of importance, is free from technical terms, is scientifically accurate, delicate and refined. Information is imparted which should save from the consequences of blundering, and enable its possessor to escape the ills which ambush in mystery and ignorance. The author has treated the most delicate subjects with that same force which characterizes the preceding books of the series, addressed to boys and to young men, and which won for these books such unsolicited and hearty commendation.— *What a Young Husband Ought to Know. By Sylvanus Stall, D.D. William Briggs, 33 Richmond St. W., Toronto, Ontario, Canada. Price, $1.00. net.*

"What a Man of 45 Ought to Know."

It has been aptly said that a man at forty-five is either a fool or a physician. In the earlier books of this Self and Sex Series, the author, Sylvanus Stall, D.D., associate editor of the *Lutherian Observer*, has sought to save young boys, young men and young husbands from mistakes which can only be avoided by intelligence. Few men know that important physicial changes await them about middle life. Perhaps it may be truthfully said that men of forty-five are as ignorant of the nature of the changes through which they may be passing as boys at the period of adolescence. In this book, Dr. Stall, in that best way which distinguishes the earlier books of the series, sets forth the character of the changes which occur in the physicial life of both men and women. The author makes out a clear case; apprises laymen of what intelligent physicians admit; prepares his readers to solve the mysteries of those changes and by intelligence to escape the consequences of ignorance. To many men the guidance of this book will be a timely benediction.—*What a Man of 45 Ought to Know.—By Sylvanus Stall, D.D., William Briggs, 33 Richmond St. W., Toronto, Ontario, Canada. Price, $1.00.*

"What a Young Girl Ought to Know."

It is just what every mother needs to

know when her children are growing up around her. It tells the mother how to present in a right way to the mind of a growing girl just what the mother would be glad to tell if she only knew how to tell it.

Mary Wood-Allen, M.D., clothes the facts of the origin of life in delicate language and surrounds them with an atmosphere of sacredness and purity. With the sympathy that a mother can feel, the author gives instructions in a manner that will safeguard her child from the consequences of ignorance.—*What a Young Girl Ought to Know. By Mary Wood-Allen, M.D. New revised edition. Cloth, $1.00, net. William Briggs, 33 Richmond Street West, Toronto, Ontario, Canada.*

"What a Young Woman Ought to Know."

The book is divided into three parts; the first treats of the value of the body and its hygiene, the second of special physiology and the laws of maturity, and the third of love, engagements and marriage.

The author brings to her task the training of a physician, the sympathies of a mother, and the character of a teacher who has discerned the highest ideals, and lived in accordance with them.

The chapters on the care of the body are simple, sensible, and practical, and the directions given have in mind one result, and that is the attainment and maintenance of good health. In treating the subject of special physiology, the author avoids technical medical terms, and tells the young woman of the physical laws governing her nature, how to obey them intelligently, and what penalties follow their violation. With the finer nervous organization of woman, and the high office assigned her, it is essential that she should know how to care for herself, as impairment of her physical organization not only means personal suffering, but often wrecks the happiness of others related to her. "Obedience is freedom," is the keynote of the truth emphasized in these chapters, and a deeper realization of the divinity of womanhood and the sacredness of sex must irresistibly be borne in upon the mind of the reader.

The ineffaceable experiences of love, engagement and marriage are handled with a firm touch. The author would equip the young woman with such qualities of heart, mind and body that each experience might yield its joy untrammeled by a single sad mistake.

Although writing with the wisdom of maturity, Dr. Wood-Allen never for one moment loses her sympathetic understanding of the sentiment of young womanhood, its overflowing enthusiasm, abounding life, and the impatience with which it meets the check of restraint. Her council is given tenderly, and without repellant harshness. The book should help every young woman who stands upon the threshold of an untried life to meet its difficulties intelligently, and to become receptive to its deeper meanings and higher possibilities. —*What a Young Woman Ought to Know. The second volume to women by Mrs. Mary Wood-Allen, M.D., published in connection with the companion books to men, by Sylvanus Stall, D.D., under the joint title of the Self and Sex Series. William Briggs, 33 Richmond Street West, Toronto, Ontario. Canada. 264 pp. Price, $1.00.*

"What a Young Wife Ought to Know."

This book takes the subjects concerning which young women everywhere are so ignorant, and lifts them into the exalted place they must ever hold in the minds of the intelligent. No other class are so entirely without information as most brides, young wives and young mothers. Three thousand years ago the inspired writer declared "the people are destroyed for lack of knowledge," and the statement is still true to-day. This book to young wives and mothers should have been written centuries ago, and no time should now be lost in bringing the knowledge it contains into the hands of young women of marriageable age. It tells the young wife just what she needs to know, and tends to prevent those mistakes which have wrecked so many lives. It equips the young wife to discharge intelligently the duties of her responsible relation.—*What a Young Wife Ought to Know. $1,000 Prize Book, by Mrs. Emma F. A. Drake, M.D., 288 pp. William Briggs, 33 Richmond Street West, Toronto, Ontario, Canada.*

"What a Woman of 45 Ought to Know."

In this latest and concluding book of the series, Mrs. Drake has equalled in style and interest the character of her previous

book, "What a Young Wife Ought to Know," for which she received a prize of one thousand dollars. It is written in that wholesome, sympathetic manner characteristic of all the purity books in this series.

It should be read by every woman nearing and passing through middle life. It will do much to reassure nervous ones needlessly alarmed by patent medicine advertising and opinions of ill-advised friends, and will dispel apprehensions aroused by groundless forebodings.

This book is for single women as well as the married, and its pure yet stimulating teaching is calculated to give confidence to the most timid. Besides telling of the heralds of the change and the various symptoms disturbing the mental and nervous equilibriums of women at this period of their lives, it gives many valuable suggestions for the improvement of the health and the care of the body. A careful following of the hygienic advices here given ought to lengthen the lives of our women and make their mature years the happiest and most useful of all.—*What a Woman of 45 Ought to Know. By Mrs. Emma F. A. Drake, M.D. Cloth, 211 pp. William Briggs, 33 Richmond Street West, Toronto, Ontario, Canada. Price, $1.00, net.*

CURRENT PERIODICAL COMMENT AND WORKING NOTES.

In addition to contributions and editorials, noteworthy from a public health standpoint, in periodicals quoted herein for this month:—*The Canadian Medical Association Journal* (Vol. I., No. 11, received) contains Dr. W. H. Hattie's paper read before the Canadian Medical Association, last meeting, "The Prevention of Insanity" and an excellent editorial, "The Proprietary School." *Journal of the Royal Sanitary Institute* (Vol. XXXII., No. 10, received), contains, among a number of excellent papers read at the last meeting of the Royal Sanitary Institute, "The Disposal of Refuse in the Tropics," by Major R. J. Blackham, R.A.M.C., D.P.H. *Journal of the Royal Army Medical Corps* (Vol. XVII., No. 5, received), contains "The Work of Divisional Medical Units in the Field," by Col. L. P. Woodhouse; "A Criticism of Quinine as a Malarial Prophylactic," by Captain P. S. Lelean, R.A.M.C.; and an editorial, "The Nutritive Value of Bread Made from Different Varieties of Wheat Flour." *The Canadian Practitioner and Review* (Vol. XXXVI., No. 11, received), "The Use of Cold Baths in Diseases of Children," by Jas. Newell, Ph.B., M.D., C.M.; and an editorial on "Prison Reform." *Journal of the Outdoor Life* (Vol. VIII., No. 11, received), "The Physiology of Fresh Air," by Thomas H. Hay, M.D.; "The Treatment of Diseases Other Than Tuberculosis in the Open Air," by W. P. Northrup, M.D.; "Fresh Air in the Home," by Thomas Spees Carrington, M.D. *Le Journal de Médecine et de Chirurgie* (Vls. Anne, No. 11, received), "Principales Indications à Suivre dans le Traitement du Lupus Tuberculeux," par le Dr. Gustave Archambault. *Dominion Medical Monthly* (Vol. XXXVII., No. 6, received), "A Law of Sensitiveness," by Goldwin W. Howland, M.D., M.R.C.P. *The Prescriber* (Vol. V., No. 61, received), "Preparation of Salvarsan Injections," by Thomas Stephenson, F.C.S., F.R.S.E.; (Vol. V., No. 62, received), editorials, "Bacteriophobia," "Excretion and Drug Action." *Journal of the Royal Institute of Public Health* (Vol. XIX., No. 11, received) Harben Lecture No. 2, on "Biological Differentiations of Proteids by the Precipitin Reaction, with Especial Reference to the Forensic Examination of Blood and Meat," by Professor Paul Uhlenhuth, M.D.; "The Chemistry and Nutritive Value of Bread," by R. Murray Leslie, M.A., B.Sc., M.D. *The Western Medical News* (Vol. III., No. 9, received), editorials, "Those Who Make the Laws Must Keep Them," "Post Graduate Course of Study for the General Practitioner." *Successful Medicine* (Vol. I., No. 1, received), editorial, "What is a Nostrum?" *Oral Health* (Vol. I., No. 12, received), "The Importance of Proper Oral Conditions in the Prevention of Disease," by J. W. S. McCullough, M.D., Chief Health Officer of Ontario. *The Canadian Teacher* (Vol. XVI., No. 6, received), editorial, "What the School Really Does." *The Canadian Municipal Journal* (Vol. VII., No. 12, received), editorial, "Public Health." *The American Journal of Clinical Medicine* (Vol. XVIII., No. 11, received), editorial, "Are Diseases Increasing?"; "The Etiology, Nosology and Treatment of Pellagra," by George C. Mizell, M.D.; "Immunity to Infectious Diseases," by N. B. Shade, M.D. *The Fruit Magazine, Scientific Farmer and Canadian Citizen* (Vol. IV., No. 2, received), "Irrigation and Drainage," by F. E. Jones. *Merck's Archives* (Vol. XIII., No. 11, received), "The Betterment of the Blood," by Edward A. Tracey, M.D.; editorial, "Modern Therapy and Malignant Disease." *Contract Record* (Vol. XXV., No. 48, received), editorial, "Noteworthy Congress at Montreal."

The Sanitary Record (Vol. XLVIII., No. 1144, received), "The Economics of Housing," by A. G. Anderson, M.D., D.Sc., M.A.; (Vol. XLVIII., No. 1146, received), editorial, "The Assessment of Health Authorities by the Local Government Board." *Medical Officer* (Vol. 6, No. 20, received), "Vaccine Treatment of Enteric Fever," by D. Stewart, M.B., Ch.B., D.P.H. *Journal of the American Public Health Association* (Vol. I., No. 11, received), "Public Health and Public Hysteria," by Samuel Hopkins Adams, M.D. *The Canadian Engineer* (Vol. XXI., No. 20, received), "Railway Telephony," by Howard W. Fairlie. *Public Health Reports* (Vol. XXVI., No. 46, received), "Investigation of the Prevalence of Typhoid Fever at Charlestown, W.Va.," by J. R. Hollis, M.D., Assistant Surgeon Public Health and Marine Hospital Service. *School Board Journal* (Vol. XLIII., No. 6, received), "The Identification of the Missing Child," by Leonard P. Ayres, Ph.D.; "Education the Making of a Man," by Donald J. Cowling. *The Indian Medical Gazette* (Vol. XVI., No. 10, received), "Staff Tours and Their Uses," by Patrick Hehir, M.D., F.R.C.S., (Ed.); editorial, "The Thermal Springs of India."

The Havana Sewerage Scheme.

In an article published in a recent number of the *Engineering Record*, of New York, it is claimed that the sewerage work at present under construction at Havana is the largest contract for sanitary works ever made. Of three hundred miles of sewers and drains about 200 miles are already completed. The works are designed to meet the needs of twice the present population, and the system will, when completed, be one of the most perfect and comprehensive in existence. The ordinary sewerage system of a large town is of necessity generally a patchwork production, altered, adapted and repaired during the course of years, and it has seldom been possible to carry out a large scheme in its entirety at one time.

At Havana the sewage will be discharged into the sea at a point where the gulf stream will carry it away, and this was considered better than imposing upon the city the continuing cost of sewage purification. The two main intercepting sewers are 4 in. in diameter, and are constructed of reinforced concrete tubes 9 in. thick with flat bases 3 ft. 6 in. wide.

The difficulty of building sewers of this diameter in the narrow streets of Havana was found to be so great that it was decided to use concrete pipes made elsewhere. A syphon 7 ft. in diameter carries the sewage under the harbor. This syphon is a concrete-lined shielddriven tunnel. After passing through the syphon the sewage is lifted 24 ft., by means of Worthington pumps electrically driven, and flows on through a concrete lined tunnel piercing Cabana Hill, and thence through a subaqueous outfall of cast iron pipe laid in concrete, extending to a point 550 ft. off shore where the water is 30 ft. deep, and where the average rate of the current is four miles an hour.

For the surface-water drainage there are several separate systems of pipes, each having its outfall either into the sea or harbor. Generally speaking, all sewers and drains up to 20 in. diameter are made of vitrified clay pipe. All those of larger section are made of reinforced concrete. In some places it has been found to be impossible to keep water out of the trenches, and here the concrete pipes are being laid and jointed in the water.

For handling pipes and excavated material a system of overhead mono-rail tracks, supported on A frames, has been used, the entire plant being operated electrically. This plan has been found of great advantage in the narrow streets of Havana.

An Advocate of Face Creams and Powders.

The use of face creams and make-ups, says the *New York Medical Journal*, is universal and the moral aspect of the question is becoming settled. Our women now fearlessly and scientifically handle the complexion brush, the face cream, and the powder puff. Why is the face of a country woman of 60 years faded and wrinkled, while the face of a city woman of the same age frequently is smooth and beautiful? On account of protection against the elements. The city woman has been using her cream and powder for forty years, and has yet to experience any deleterious effects.

The idea that the faces of actresses are old looking off the stage is pure superstition. Many an actress courted of our fathers has a complexion the envy of our daughters. These are things the physicians should know and not be afraid to say.

Education vs. Nutrition.

"Education versus Nutrition," is the heading of a cartoon presented in the latest *Bulletin of the Chicago Health Department*. It calls attention to the importance of proper nutrition, along with the education of a child.

The cartoon depicts a pale faced youngster toddling toward a school building under the weight of a huge book, many times the size of his tiny luncheon receptacle, which he carries in his other hand. Beneath the picture is printed the following:

"Health must not be sacrificed to education. What will it profit a child, the man, and a community if he gain a world knowledge, and lose his health? A wise community will safeguard its future well being by recognizing its obligation to its child citizens. There must be no underfed school children."

Children and Sweetmeats.

A discussion in the *British Medical Journal* raises the question as to the advisability of allowing children to eat sweets. Careful investigation of the effects of sweetmeats has led several specialists to believe that not only may the teeth be injured thereby, but that not infrequently the consumption of jujubes, chocolates, acid-drops, comfits, and so forth, brings about stomach troubles that indirectly affect the whole system. On the other hand, there are eminent medical authorities who deny the harmful effects of sweet-eating. There is, however, no doubt that the continued presence of sugar in the mouth is favorable to the development of microbes which produce acid-substances very detrimental to the teeth. Further, any process of fermentation set up in this way may very well react unfavorably on the stomach. But it has yet to be proved that the proper care of the mouth, and due use of the tooth brush, will not counteract such effects; if the hygiene of the teeth be neglected, they will certainly decay, sweets or no sweets.

In any case, this is a matter which merits the fullest investigation, for, considering how common dental disease and faulty digestion are at the present time, it has become of national importance. Now that public institutions are making special endeavors to care for the teeth of school children in an efficient manner, everything that tends to forward their efforts in this direction is particularly urgent. Moreover, it must be remembered that all sugary substances are energy-producing, and for this reason it is important that sweets should not be forbidden to children—who use up so much energy by their restless activities—unless really adequate reasons can be found for so doing.

The Dust Problem.

In a recent number of *The Journal of the American Medical Association*, Dr. H. S. Anders, of Philadelphia, discusses this problem at length and relates the efforts made in Philadelphia to suppress this evil. Letters were sent to the Mayors of Baltimore, Buffalo, Birmingham (England), Berlin (Germany), Budapest (Hungary), Cleveland, Denver, Detroit, Dublin (Ireland), Leipsic (Germany), London (England), Minneapolis, New Orleans, New York, Paris (France), St. Louis, Stuttgart (Germany), Toronto (Canada), Vienna, (Austria), and Washington, D.C. A summary of the replies shows:

1. In a majority of the cities where results were satisfactory, the principal cleaning was done at night, or completed before six o'clock in the morning.

2. Thorough sprinkling preceded sweeping. Sprinkling was also done two to four times daily in dry (non-freezing) weather to lay prevalent dust.

3. Flushing wagons or flushing from curb to curb with hose is the method used in preference to sprinkling and machine sweeping in the best cleaned cities.

4. Hand sweeping by blockmen in daytime is always preceded by wetting with a hand sprinkler

5. Piles of dirt are immediately removed while wet or damp in covered wagons.

6. Last, but by no means least, is the dustless operation of dust and dirt removal by automobile vacuum street-cleaners, on the principle of vacuum house-cleaning which is now rapidly taking place of the old dirty, dust-raising broom and feather-duster. In one hour as much surface can be actually cleaned as was imperfectly gone over with duty accompaniments by horse-drawn sweepers in six hours.

It is a hopeful sign of the awakening of

the public to demands for civic cleanliness, that officialdom is beginning to respond in a readier performance of its duty and responsibility in safeguarding the public health and incidentally safeguarding respect for law, order and government. To avoid an insurrection of the citizenship, there must needs be a resurrection of statesmanship.

Toronto Water.

The filtration plant at Centre Island is nearly completed, and it behooves us, says *The Canadian Engineer*, to ask at this time, Of what use is it? After this filtration plant is in operation, what would it avail if a serious contamination of the water supply should occur? Filtration will certainly not remove the germs. Passed through sand filters, the lake water, containing little or no organic matter, and but little silt, will remain in its original condition. It will have practically no effect on the organic matter in solution, or the bacteria which are traceable to sewage contamination.

On the 28th of October the writer paid a visit to the chlorination plant at Hanlan's Point, where the water supply of Toronto is treated, and was astonished to find it under the constant control of a technical chemist, bacteriologist, and an assistant chemist under the Health Department. There it was noted that, while it is now the cool season of the year, instead of the chlorine treatment being lessened, it is steadily being increased, there being used at the present time .419 parts chlorine per million. Mr. F. B. Robertson, who is the chemist in charge of the chlorinating plant, finished the work left by Mr. Earl B. Phelps, one of the many consulting experts employed by the city in the past, taking the badly designed scheme of applying the chlorine to the water as it then stood, and revising and adjusting it, so that at the present time it is working well.

As is well known, the action of chlorine on water is not by any means permanent in its bactericidal effects. Akin to the ozone process, its result is due, not to the chlorine so much itself, but to the nascent oxygen liberated for the time being. Unless the water is pure, there still remains food for the cultivation of new generations of bacteria.

The city experts state that they will treat the effluent of the sewage plant with chloride, and what the chloride does not sterilize will be looked after by the lake itself. Of what use, however, is it to treat the effluent with chlorine in order to kill off the microbes when the very food, the presence of which alone accounts for their existence, is still untouched? This is not a question which can be solved by the engineer or bacteriologist, but should be placed in the hands of a competent technical chemist. What the city now requires is thorough chemical advice and control. Eliminate their food and the microbes will soon vanish. Merely killing them off is not sufficient.

The recommendations by the Medical Health Department that the water be subjected to chlorine treatment after filtration obviously shows the scientific work of those who ought to know better. The city employs only two chemists engaged as such, and these are installed in a complete laboratory at the Island filtration plant under the Water Department. They are kept tinkering and experimenting away on water filtration, and this only spells more useless expense

With proper handling it is probable that the city's water supply would require no treatment at all, or, at the most, would not necessitate the addition and presence of large quantities of such a powerful and obnoxious chemical, which, although destroying the germ, does not eliminate any more than a sand filter the filth from which it springs.

It appears to us that the time has arrived for the city to employ a competent and technical chemist, who is thoroughly experienced on work of this nature, for it is evident there is a conspicuous lack of technical knowledge among the city experts at the present time. If such a man were appointed he could investigate the advantages and disadvantages of the various systems, including chlorine, ozone, ultra violet ray, etc., for the treatment of water, and could also go into the chemical treatment of the sewage effluent. This question of sewage effluent is an exceedingly important one, and we are satisfied that if investigations were carried on along the line of methods of purification of effluent, other than chlorination, it would amply repay the city the expense of such an investigation.

Chinese Vitality.

Prof. A. E. Ross attempts to show in an article on "The Race Fibre of the Chinese," contributed to *The Popular Science Monthly*, that the lower class Chinese display great resistance to disease because of the lack of sanitation and the consequent deaths of weak offspring in infancy and youth; thus only the hardy members of the race perpetuate their kind.

The *Journal of the American Medical Association* comments on this proposition, summarizing Prof. Ross's theory and the manner in which it works out.

"The larger effect of hygienic measures," says the writer, "is a question which presents many moot points. From a humanitarian standpoint no one questions the duty of safeguarding by every means within the power of science the lives of the population, and especially the infant population. From the standpoint of physical race betterment, however, many regard hygiene and sanitation as of doubtful or negative value, since these measures allow the weak to live and perpetuate their kind.

"Assuming that in a considerable proportion children who succumb to bad hygiene and defective food are inherently weak — a theory by no means universally admitted — it would be conceded that if they were aided in reaching a maturity which must be more or less defective, they would transmit their weaknesses to their descendants, and thus contribute measurably to the deterioration of the race as a whole. An attempt to show how this works out under actual existing conditions as between the Chinese and the Western white population has been made by Prof. E. A. Ross.

"Ross says that, on account of lack of good hygienic conditions in China, out of ten children born, the three weakest will die in infancy and five others will probably fail to grow up, while in our own country, out of the same number of children born, only three will fail to reach maturity. This would seem to favor better hygienic conditions for the betterment of the race, yet Ross feels that there may be some doubt on this point.

"For, of the seven surviving, the five corresponding to the five additional Chinese who die, will, according to hypothesis, be weaker in constitution and will transmit their weaker qualities to their offspring; while the two surviving Chinese are the hardiest of the lot and will transmit their hardy qualities to their offspring, thus in the end increasing the general stamina of the race.

"In order to test this idea, Ross closely questioned thirty-three physicians practicing in various parts of China, chiefly in missionary hospitals. Twenty-nine were positive that the Chinese physique evinces superiority in some respects over that of the white people of the Western world. It has been found that surgical shock is rare among the Chinese, that they endure surgical operations well and recover from them, from most serious injuries, and from septic conditions in an astonishing manner. They also stand higher degrees of fever, are more resistant to pus-producing germs, and are very tolerant of pain, while fewer Chinese women die from puerperal fever.

"This applies particularly to the lower classes, who live among the most unhygienic surroundings. The percentage of recoveries in the poorly equipped hospitals from the gravest injuries and operations equals or exceeds that under the ideal conditions of the best-equipped hospitals of Berlin or Vienna.

"This indicates a strong and abiding race vitality, and it may reasonably be assumed that it is a direct result of the survival of the strongest, or at least most enduring members of the race. In other words, the selective process imposed by unfavorable surroundings has established in the Chinese a higher degree of immunity to conditions inimical to survival.

"The deduction would seem to be that the way to produce a strong race, well endowed with vital qualities, would be for that race to multiply to excess and then to undergo murderous reduction by exposure to disease and unhygienic conditions. A second consideration shows that this process has its drawbacks. While under poor or bad conditions the Chinese will outdo the white man, under good conditions the latter rises to a higher level of efficiency.

"The Chinese who can underlive, cannot outwork the white man under the white man's conditions. In short, the low-caste Chinese seems to illustrate very well an often misapprehended fact—

namely, that the survival of the fittest is not necessarily the survival of the best, the most efficient, or even the strongest; it is simply the survival of those best fitted to survive in that particular environment, and not necessarily well fitted for any other environment.

"Those who are fittest for a white man's environment are less fit for that of a Chinese, and vice versa. The fitness of the low-caste Chinese is fitness to endure existence on the lowest terms. On the evidence so far presented we may dismiss the case against hygiene as an agency in the deterioration of the race with the Scotch verdict—not proven."

Typhoid and Western Canada.

Years ago, according to the *Vancouver World*, settlers in the Canadian west were obliged to drink water from the sloughs. They did not know very much about bacteriology in those days, but they took the precaution to strain out the larger animals by passing the water through a towel.

The towel has been discarded in most western centres; they pursue the typhoid fever microbe with chlorine and filters and other modern appliances. But the invisible enemies of the human race are tenacious of life, and too often succeed in evading the primitive measures of the local board of health. As long as the open well is tolerated in towns or cities typhoid fever will slay its thousands.

The most recent example of this glaring truth is Saskatoon. In spite of its poetic name, Saskatoon is not immune. There are hundreds of wells in that thriving metropolis and the citizens are so infatuated with the idea that nothing can be unclean in their bright, new town that they go on drinking from the cisterns in their backyards. The consequence of this optimism is that an epidemic of fever has filled the hospitals to overflowing.

There is nothing to be so much commended as the buoyant spirit of the people of our west. But there is nothing so pathetic as to see men in the full tide of prosperity and in the prime of life cut off by an epidemic which surely might be avoided. The old oaken bucket, so modern science has proved, is nothing but a nest for microbes, and the well in any urban locality is a menace. The best thing that the municipal authorities of Saskatoon could do would be to fill up every well in town and find a pure water supply near at home.

The Business Value of Parks.

A business man went to visit Memphis not long ago, to see what advantages that city offered as a place to establish a branch of his factory, writes Henry Oyen in the *World's Work*. The first thing he said to the two Memphis citizens who met him on the train was:

"Now let us hop into a machine and go out and see how you are fixed for parks and boulevards and public buildings."

"Please explain," he was asked. "Do you mean to say that you are such a lover of the beautiful that you wouldn't locate your branch in a city that has not its fair proportion of parks, or an artistic city hall, and that sort of thing?"

"Lover of the beautiful, nothing!" was the prompt reply. "I make furniture. I must have plenty of good steady help to do it. No city is a good city for the man who must have good, steady help unless it has kept step with other cities and provided places for the help's sane and healthful recreation. That's just business. There is, also, a new day in the making of public buildings; and if a city hasn't kept step there, either, and hasn't started a movement for fine, artistic civic buildings it is a sign that something is wrong with the community. It isn't on its job."

The Club Woman Joke.

The club woman joke, remarks the *Chicago Journal*, seems to have gone out of circulation. It is not easy to be humorous at the expense of an institution that is doing big work in an effective way.

Take, for instance, the "campaigns of education" that are being promoted by the public health department of the General Federation of Women's Clubs.

Here are some of the subjects that form the basis of this year's crusade: "Tuberculosis; Ventilation and Fresh Air," "Mouth Hygiene," "Clean Food; How and Where to Get It," "School Hygiene," "Prevention of Blindness," "Infant Mortality," and "Food Sanitation."

What masculine crusade of recent years is as important to the welfare of the coun-

try as this national movement to educate the people to adequate understanding of the nature and importance of these topics?

The best physicians assert that public health is not so much a matter of curing disease as of spreading the knowledge of how to prevent it.

Along this line the work of the women's clubs is invaluable. It is inculcating in thousands of families practical knowledge of hygiene and right living. It is arousing a public interest that promises within another generation to revolutionize conditions in both the home and school.

No wonder that sensible men no longer deride the club woman. She has won a place of honor and achievement in the modern social system. That she will continue to occupy and adorn it goes without question.

Escaping of Contagion.

The November number of the *Toronto Health Department Bulletin* points out that when all is said about contagion, and the methods of carrying the same, we come back to the old query, "How do any of us escape?"

To tell the truth, we all take into our bodies every day by our mouths all sorts of germs, some of which may be disease producing, and the fact that only a few of us succumb to the effects of these germs, shows that we are able to resist them.

In other words, the body is immune to the attacks of those organisms, in most cases. The better the physical condition we are in, the better we can resist them. When we become over-fatigued, over-worked, under-nourished, chilled, get wet feet or are exposed to sudden change of temperature, then the mechanism that protects us against disease is apt to give way, and the tissues which are constantly resisting the inroads of these bacteria fail in their function, and we get perhaps a cold, or the grippe, or pneumonia, or rheumatism, or possibly diphtheria or scarlet fever. Tuberculosis or consumption particularly, is resisted by keeping the body in the very best physical condition.

To keep well requires constant care on the part of the individual in seeing that he is suitably clothed, fed and housed, that he gets sufficient sleep, exercise and fresh air.

It is the duty of the state or municipality to see that certain general regulations relating to the health of the community are carried out, but each individual must look after his own welfare, and try to keep himself in such a condition of health that he is at least immune to the great majority of infectious diseases.

Physicians and Contagious Diseases.

In the latest number of the *Quarterly Bulletin of the State Board of Health of Iowa*, Dr. Gullford H. Sumner, secretary, presents the question of disinfection in a number of its practical aspects. One of these articles is addressed to the physician. It is based on the general ground that although many of the physicians are thoroughly aware of the need of especial care not to spread the infection of one of his patients to the outside world and to other patients, there are many others who have given the subject hardly a thought. But at the same time one having in no ways a medical training may readily see that such cross-infection is not only possible, but even easy. It is a factor to distribution of infectious diseases that is recognized in the building of hospitals and the arrangement of the equipment and details of the same, and is one of the subjects appealing most strongly to hospital men, but outside the hospital doors it is true that but little attention is paid to it.

"One of the most important means to be used," writes Dr. Sumner, "in the prevention of the dissemination of infectious material, is the care taken by the physician before he visits a home where a contagious disease exists. There is a simple method whereby any physician may properly prepare himself to visit such an infected home." The secretary suggests for such occasions an outfit consisting of rubbers, overalls, blouse, handkerchief, and cap, together with a small hand-satchel, the clothing to be worn when coming in contact with contagion and the satchel to carry it to some place where it may be fumigated. This may be done at the physician's home by using a small box and the formaldehyde method, remembering that ammonia may be used to kill the formaldehyde odor and make the garments available for immediate use after fumigation.

Open Mail

To the Editor, The Public Health Journal, State Medicine and Sanitary Review.

House Ventilation.

Sir,—Air in houses may be polluted by the gases breathed from our lungs and that escaping from leaky stoves. Air contains enormous numbers of dust particles. The average city air is estimated to contain three million dust particles to the cubic inch. Country air contains two thousand dust particles to the cubic inch. The air in-doors contains ten times as many dust particles as the air out-of-doors. With the dust, of course, are mingled the small dust plants with probable germs of disease. Ventilation is the replacing of the impure air of a room, or other enclosed space, with proper air from out-of-doors.

Inasmuch as the adult human body requires for regular use about five hundred cubic inches of air every minute, the air in the immediate vicinity of the nose is quickly used up and an equal amount of impure air is breathed out of the lungs. It is therefore necessary that pure air from out-of-doors be constantly pouring into our rooms and the impure air passing out.

One cannot do his best work if he is breathing impure air. One is more susceptible to disease if he breathes impure air, because his body is not strong enough to resist the disease germs when they are once admitted into the body. Disease germs which grow in the interior of our bodies also flourish best in a small supply of air. The proof that people are injured by breathing impure air, has been obtained by comparing statistics for a certain number of years gathered among men living in unventilated, and those living in well ventilated places.

Air does not move of its own accord. In our houses we best create a circulation of air by having two windows open, one for the impure air to pass out, another for pure air to enter. One window open, however, will serve as two. Ventilating should be done in such a way as not to cool the room too much; for this reason the window is best lowered from the top, in order that the air may be heated before mingling with the air in the lower part of the room. The lower sash may be raised and a loosely fitted board inserted; fresh air then enters through the space between the upper and lower sash and is directed upward, thus avoiding direct draft.

It is better to have a window open all the time than to air the room only occasionally. There should be a constant removal of impure air and a fresh supply of pure air. An open stove or fireplace is a reliable means of getting rid of impure air.

Air is of even greater importance at night than it is during the day. The body recuperates mostly at night during sleep; then large amounts of oxygen are required, so there should be plenty of fresh air at night. The sleeper may be protected from drafts by a screen or chair between the window and the bed.

ELIZABETH JEFFERSON,
College of Agriculture, Ohio State University.

Purifying Smoke by Washing.

Sir,—In a method of freeing chimney gases from soot and dust by washing, which has given good results, the gases are drawn by a fan from the boiler, passed through a brick-lined chamber containing water sprays, and then led by a tortuous course to a rather short stack. For 300 cubic feet of hot gases per hour, one gallon of water is used. The pea clack coal contains forty per cent. of dust and in 24 hours the smoke-washing has collected as much as 1,600 pounds of grit, or about 1.5 per cent. of the coal burned. J. C. E.

Meetings and Reports

DOMESTIC

ADVANCE NOTICES.

Canadian Public Health Association Congress, under the patronage of Field Marshall, His Royal Highness, the Governor General; December 13th, 14th and 15th, 1911. Royal Victoria College, Montreal. F. C. Douglas, M.D., Secretary of Committee for Local Arrangements, 51 Park Ave. *Child Welfare Exhibition*, Montreal, October, 1911. The objects are: I. To present evidence of all the various activities—educational, religious, charitable, philanthropic and medical making for the improvement of conditions of child life, so that their existence and special work may be advertised, their inter-relationship may be recognized and the public be further stimulated to support and advance their endeavors; II. To show the deficiencies in public and private organizations and to suggest remedies for the same, drawn from the experience of other communities, in this way supplementing and extending the work already being accomplished; III. To correlate the endeavors of many existing associations, developing thereby a body of concerted opinion sufficiently strong and influential to bring about the needed improvements in the surroundings and upbringing of the city child. It is proposed that the Exhibition shall have the following departments: 1. The Health of the Child; 2. The Home of the Child; 3. The Education of the Child; 4. The Moral and Religious Life of the Child; 5. The Recreation of the Child; 6. City Environment and the Child; 7. The Law and the Child; 8. The Social Life of the Child; 9. The Care of the Abnormal Child; 10. Philanthropy and the Child. The Executive Secretaries are: W. H. Atherton, Ph.D., 62 Beaver Hall Hill; Tel., Up 1380; and Rev. J. O. Maurice, L.L.., 55 Ontario, East; Tel., East 925. *The Canadian Forestry Association*, February 6, 7 and 8, 1912. Annual meeting. Ottawa. James Lawler, Secretary.

Sanatorium Medical Society.

During the month of November the Sanatorium Medical Society held their two regular fortnightly meetings in the Muskoka Free Hospital. Interesting papers were read by Drs. W. B. Kendall, C. B. Rose, W. E. Ogden, James Beatty and W. J. Dobbie. Cases were shown where possible, which made the meetings more practical. All the men took part in enthusiastic discussions which followed, in which Drs. Pratten, Finnerty and Alexander also joined.

Dr. Lollard McLeay, of Gravenhurst, was a welcome guest at the last meeting.

Canada and European Hygiene.

Dr. C. A. Hodgetts, medical adviser to the commission of conservation, and Major Lorne Drum, M.D., D.P.H., General Secretary of the Canadian Public Health Association, reporting on their recent three months' trip to Great Britain and the Continent, where they have been familiarizing themselves with the latest developments in sanitary science and public health work, state that special attention was paid to housing and to town-planning. At the congress on infantile mortality, held in Berlin, Germany, they became conversant with the latest European practices in connection with the lowering of infantile mortality. This is a subject to which the Commission of Conservation is giving a good deal of attention in Canada.

The Dublin Congress of the Royal Institute of Public Health held in August last, was also attended, where an opportunity was afforded of meeting some of the most prominent sanitarians of Great Britain. From the papers read, and the discussions which followed, considerable and valuable information was obtained respecting the progress being made in different parts of the British Empire on town planning and housing of the working classes. More than usual interest was taken in the congress, as Lady Aberdeen filled the position of president. Through Her Excellency's kindness and forethought every opportunity was afforded to study the work being carried on in Ireland for the betterment of the people, particularly for the prevention of tuberculosis.

The second congress attended was that on infant mortality, which was held in Berlin, Germany. The work of the congress

was taken up under the following sections: 1, teaching and training of physicians, midwives, nurses and social workers; 2, infant welfare work in practice. Considerable discussion was aroused upon the question of milk depots and the care of milk. It was clearly shown that unless they are supplementary to what is known as infant consultations, they are likely to do harm by discouraging breast feeding and conducing to over-feeding.

The third section dealt with legislative and administrative measures adopted for the protection of infants, the supply and control of all milk intended for infants, the treatment of foundlings and guardianships, generally. One important feature apparently, has reached a more advanced stage in Germany than in any other country.

"The work of the congress, considered as a whole," Dr. Hodgetts declares, "cannot but have a marked and world-wide influence upon the work now carried on in every civilized country for the care of the infant population, and it is to be hoped, in accordance with the plans of the Canadian Public Health Association, that ere long a congress of English-speaking people will be held in some central place so as to create a mode widespread interest on the part of English-speaking governments and municipalities, in the method and procedure adopted in many of the continental countries, particularly Germany and Hungary.

"To do anything like justice to the International Hygienic exhibition held in Dresden, would make an interesting report in itself. Suffice it to say the exhibit held in Dresden was most unique, and although well supported by most of the European countries, was deserving of more attention at the hands of the English-speaking countries."

During the trip all the larger cities of England, Scotland and Ireland were visited, as also, among other places on the Continent, were Brussels, Berlin, Dresden, Vienna, Munich, Ulm, Dusseldorf and Essen, where every facility was afforded by the local authorities to study housing conditions, sewage and water problems, the construction and management of public abattoirs, the measures adopted for the care of consumptives generally, and housing and town planning. All the important town planning places in England were visited, the chief being the Garden City, Bourneville; Port Sunlight, Hampstead; Harborne Tenants (Birmingham).

All of these subjects will be dealt with in the form of reports to be subsequently presented to the Commission of Conservation, by Dr. Hodgetts. In this manner, the public health officer of the Commission has been brought in touch with, and is now fully abreast of, everything that is being done in Europe in regard to public health.

Underground Conduits for Montreal

St. Catherine Street will be the first street in Montreal to have its overhead wires put underground. This information has been placed before the Board of Control by the Electrical Commission in a communication, suggesting certain alterations in the law by which the city is authorized to proceed with this work of public welfare. After pointing out that the drafting of plans must be carried, on, not as a whole, but in detail for certain sections of the city, the controllers are informed:

"Working along these lines the commission is proceeding with the designs for placing underground the conduits for wires on St. Catherine Street, from Atwater avenue to Papineau avenue. The different companies having installations in the streets have been requested to furnish the commission with a statement of their requirements."

Ottawa School Inspection.

Dr. Shirreff, Medical Health Officer of Ottawa, points out, in regard to medical inspection of school children, that they seem to have the idea that the inspectors will gather all the children together in a room like a lot of sheep and then proceed with their work This is not the idea at all

In the first place, no child is examined by the inspector unless at the request of the teacher of the class. It is the teachers who pick out the children they think are suffering from any ailment and then have the inspector make his examination. Even then if the parents do not desire to have their children examined by the school inspector, they are allowed to have the examination made at their own expense.

There are five points in the Ottawa plan regarding the examination and inspection and what it includes:—

1. All children isolated by the teachers as suspected cases of contagious diseases.
2. All children who have been absent from school.
3. Children returning after previous exclusion.
4. Children referred by teacher for diagnosis.
5. Children previously ordered under treatment.

Dr. Shirreff mentions that in the plan the teachers would pick out the children, who would then be examined, and the parents notified of the results of the examination by the inspector, so that they could call in their own physician. The inspector would visit the schools at eight o'clock every morning, and the children designated by the teachers would be taken into a special room and examined. Many imagined that the work would be of an indiscriminate nature, when in reality it would be done through the teachers, and no child who was not indicated by the teacher would be examined. The diseases which would exclude children from school under this inspection are: scarlet fever, diphtheria, tonsilitis, measles, German measles, mumps, smallpox, chicken pox, whooping cough, ring worms, contagious skin diseases and pediculosis.

The St. John Board of Health.

The Medical Health Officer of the city of St. John, N.B., reports last year a busy one for the Board of Health inspectors. The campaign to compel owners of properties to install modern plumbing fixtures in their houses has been productive of much improvement along that line, although much yet remains to be done. Mr. James Howard, inspector of plumbing, reports that during the year, from Nov. 1st, 1910, to Oct. 31st, 1911, the total number of all new plumbing fixtures installed was 933. Of this, 456 were patent closets. These improvements were put into 51 new houses, and 171 old houses. Mr. Howard made altogether 230 tests of plumbing fixtures, and two tests for escaping sewage. He wrote out 272 special reports, and made 291 preliminary inspections.

During the twelve months just ended Mr. Solomon McConnel, inspector for the Board, made 173 special inspections. He placarded 139 houses for scarlet fever and diphtheria, and left 68 notices of contagious diseases at the Public Library and office of the Board of School Trustees. Mr. McConnell attended sixteen meetings of the Board, and made 138 miscellaneous calls to various parts of the city. The number of premises disinfected during the year was 297. He visited houses in which were 87 cases of tuberculosis, and left literature on the proper treatment of the disease. There were 53 cases of infectious diseases which came under his notice, and 28 cases of typhoid fever. In addition, Mr. McConnell wrote out and delivered 162 milk licenses to small stores and 225 post cards to doctors on which to return information of cases of infectious diseases to the Board.

To Encourage Ontario Insane to Seek Treatment.

At a conference of medical superintendents of the Ontario hospitals for the insane at the Parliament Buildings in Toronto recently, it was decided to confer with the Provincial Secretary and ask the Ontario Government to put into force a system which would encourage voluntary admission to asylums whereby people would ask for treatment instead of being compelled to undergo it.

The question of fire protection at each institution was given consideration, and the manner in which fire drill is regularly carried out was briefly described by each superintendent.

The training of nurses and the regulations affecting the attendants, their duties, hours on duty, wages, holidays, and suggestions for improving all the conditions incident to those engaged in nursing and caring for those mentally afflicted were discussed.

Winnipeg's New Isolation Hospital.

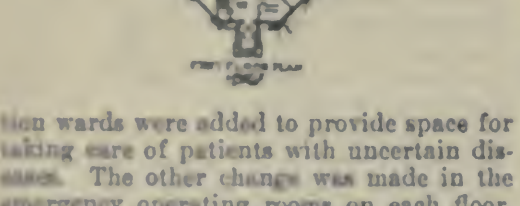
The accompanying illustration shows the design for the new isolation hospital being erected by the city of Winnipeg.

This design was submitted in competition with thirteen others, and won by Herbert B. Rugh,

The arrangement of the different rooms was pronounced by the hospital expert and jury of award, as the best layout they had ever seen for an institution for the treat-

ment of contagious diseases. Emphasizing the perfect control obtained by the arrangement of inside lobby and the double protection and isolation of each wing from the other by having the doctor and nurses enter the various wings by going into the doctor's room from the inside lobby, removing their outer garments and then stepping into the chart and gown room, where they put on their gowns and prepare themselves for their work, entering the ward from this room ready for work. In this way the double doors to the ward corridor are kept closed, except for the removal or admittance of a patient.

There were but two changes made in the plans. First, in connection with the receiving department in the basement, deten-



tion wards were added to provide space for taking care of patients with uncertain diseases. The other change was made in the emergency operating rooms on each floor, by having a small room partitioned off containing a bath tub, this bathroom to be used as the discharging bath, and the operating room as the discharging ward, as the number of operations in a children's hospital are very few and the room would be idle most of the time, unless used for other purposes.

The exterior finish of the building from the grade line to first floor window sills is to be cut stone, balance of building finished in dails brown vitrified brick with cut stone trimmings.

Foundation of the building will be concrete properly waterproofed.

The construction is to be fireproof, structural steel frame, and the floor construction to be reinforced concrete or tile.

Corridor partitions to be double four-inch hollow tile so constructed that the space inside the partition will be used for ventilation flues. The main stairway to be ornamental iron with marble steps.

The floors of all bath rooms, sink and service rooms, lavatories and toilets to be tiled with 6 inch square flint tile and the walls to be tiled 6 ft. 6 inches high with sanitary wall tiling, having sanitary cove at floor and sanitary corners, etc.

The floors of corridors, wards and other rooms to be covered with Battleship linoleum, cemented down to the concrete, with plastic cove and border at floor. All ceilings to have plaster cove.

All windows to be steel casements, lower casement section to open in with adjusters, etc. Upper transom section to be hinged at bottom to open in and down with adjusters, etc. Storm sash to cover entire opening outside with ventilator at bottom. Screens also to cover entire opening.

Heating and ventilation to be of most modern type, all wards, corridors, etc., to be supplied with direct radiation, using the modulation system. All service rooms, kitchens, toilets, and wards to have "Vacuum" ventilation. Fresh air to be taken from point above the roof of building to fans located in basement, there to be heated, washed, etc., and blown into wards through galvanized iron ducts located in false ceiling of corridors, the foul air to be taken up in vents in corridor partitions to space under roof, then all drawn together and discharged by exhaustive fans through roof at the opposite end of the building from fresh air intakes.

Vent openings to be placed at floor and ceiling, so that in hot weather air can be drawn from upper part of room as well as lower part.

Plumbing and laundry fixtures to be modern in every respect. Building to be equipped with vacuum cleaning system throughout.

All signals installed are to be electric light signals. Building will be wired for electric light service and piped for gas to kitchens, etc.

Vent openings to be placed at floor and electric light service and piped for gas to kitchens, etc.

The building is designed to accommodate one hundred and fifty patients and contains 686,174 cubic feet, including porches, entrances, etc. 1,252 cubic feet is given each patient.

Quebec Province and Smallpox.

That there has been a notable increase in the number of smallpox cases in the Province of Quebec of late, with a promise of a return to last winter's alarming figures, and that it is now the time for all unvaccinated persons to see that they are provided with this safeguard, is the statement made by officials of the Provincial Board of Health. Since the weather started to become cold, reports have come in from outlying districts showing that cases of the disease have made their appearance, though as yet conditions are not such as to create much alarm. In one village on the north shore of the St. Lawrence quite a number of cases, which were at first thought to be chickenpox, have proven to be smallpox, and inspectors of the department have been hurried to the scene.

Speaking of the recurrence of the malady, Dr. Pelletier, secretary of the board, explained that, with the approach of cold weather the disease, if at all existing, is sure to spread. This is apparently due to the fact that people, especially in the country in Quebec, live more indoors in cold weather than when the temperature is warm. In many cases houses are not ventilated at all, or at best poorly ventilated, with the result that the condition of the atmosphere in the interior becomes riotous, weakens the inmates and renders them subject to diseases. Another condition which makes for the spread of smallpox is that in cold weather country people visit quite a good deal, hold house warmings, all indoors, then disperse to their homes, to start out visiting in some other direction. The disease is thus propagated, and soon becomes epidemic.

In accordance with custom, the Quebec authorities do not give out the names of municipalities which have reported cases of smallpox, as in the past obnoxious publicity given such localities as took it upon themselves to come forward and declare all cases within their boundaries has had a deterrent effect on the reporting of cases.

Toronto Milk Must Be Bottled.

The Medical Health Department of Toronto announces that after December 1st the sale of milk in bulk is prohibited in Toronto. It must be bottled.

Saskatchewan and Moving Picture Machines.

Under the provisions of section 7 of chapter 11 of the Statutes of Saskatchewan, 1910-11, His Honour the Lieutenant-Governor, by and with the advice of the Executive Council, has been pleased to approve of the following regulations for moving picture machines:

REGULATIONS FOR MOVING PICTURE MACHINES.

Passed pursuant to chapter 11 of the Statutes of Saskatchewan, 1910-11.

Every film, exchange, and every user, exhibitor, and operator of a cinematograph, moving picture machine or other similar apparatus shall observe the following regulations:

1. Users' or exhibitors' license shall be constantly attached to the machine licensed, and the film exchange and operators' licenses shall be produced on demand for inspection to any constable or peace officer or any other officer appointed by the Lieutenant-Governor in Council to enforce the observance of these regulations. Operators' licenses shall not be transferable, and film exchange and users' or exhibitors' licenses shall only be transferred on the written consent of the deputy provincial secretary. No cinematograph or similar apparatus involving the use of a fusible film shall be kept, used or exhibited in any building or place of public assembly, or places or buildings used for entertainment, whether such place or building has a license or not, unless a license or permit shall have first been obtained from the provincial secretary, and said cinematograph or similar apparatus shall be placed in an operating cabinet which must be lined inside throughout with two-ply of 14-pound asbestos paper and covered with metal, door opening outward with spring, and shall have no lock (provided that any other fireproof cabinet that passes the inspection of any provincial officer authorized to inspect the same, may be used) and shall be equipped with an automatic cut-off, each opening to be equipped with fusible links or wire, all wires conveying electricity to this cabinet to be properly insulated by porcelain tubes or other proper insulating substances, and the cabinet shall be kept clean and free from any articles not required for performance; said cabinet shall also be provided with a ventil-

ator pipe not less than twelve inches in diameter, leading to the outer air or to a chimney with an electric fan installed so as to create at all times when the machine or machines are in operation a forced draught through the said ventilator for the purpose of carrying off all gases and smoke that may arise through accidental ignition of the film.

2. All machines shall be equipped with fire-proof magazines, automatic fire-shutter, asbestos covered wire lamp, connections throughout with proper rheostat and shall be worked by hand. All films must be kept in an iron box and all films shall be transferred from one spindle to another in a metal rewinding box.

3. Every operator shall be of the full age of eighteen (18 years). He shall examine his machine and wire connections daily and must devote his time to machine while operating. He shall not permit any person to enter or remain in the cabinet during any performance (except a provincial or municipal police officer entitled to inspect the machine), and no smoking or lighting of matches shall be allowed at any time, nor shall reading matter be allowed in the cabinet or on the person of the operator. No operator shall operate a machine while under the influence of liquor.

4. All "exits" shall be marked with a sign, with letters not less than six inches long, with word "exit," and be accompanied with a red light (and no other red lights to be used on the premises. All doors shall open outward and not be locked during time exhibitions are held. All exits shall be thrown open for use at the conclusion of every performance.

5. The cabinet shall occupy a position which does not interfere with an aisle or passageway.

6. Two fire extinguishers of the carbonic acid gas, or other pattern approved by the chief of the fire department of the municipality in which the cinematograph or other apparatus is exhibited, in good working order, besides a sand pail and shovel, shall be kept continuously near the operating cabinet.

7. All halls, passageways, stairways, or approaches shall be kept free or unobstructed by any campstool, chair, sofa, hinged seat or other obstruction, or by allowing the public to stand in the aisles.

8. The Lieutenant-Governor in Council may appoint a board of censors to examine all films to be exhibited in Saskatchewan, and the film exchange shall submit all films to such board to be examined and stamped. The stamp of the Board of Censors shall be shown on each occasion before the film bearing it is exhibited, and any film exhibited which does not bear such stamp will be liable to seizure by any constable or peace officer or any other officers appointed by the Lieutenant-Governor in Council for the purpose of enforcing the observance of these regulations, and the persons who exhibit such films shall be liable for a breach of these regulations.

9. It shall be the duty of all municipal police officers to examine the licenses of any person using, exhibiting or operating a cinematograph, moving picture machine or other similar apparatus and to prosecute users, exhibitors and operators who are unlicensed or who violate these regulations.

10. A violation of these regulations or any of them shall render the holder liable in addition to all other penalties to the forfeiture of the provincial secretary's license.

11. All licenses shall be issued by the provincial secretary, and no person shall operate any cinematograph or other similar apparatus until he has received a license from the department of the provincial secretary, such license to operate to continue for one year and the fees therefor to be as follows:

For all film exchanges	$100.00
Users' or exhibitors'	20.00
Operators'	10.00

12. All film exchanges whose films are exhibited in Saskatchewan shall have an office in the city of Regina.

13. No municipal corporation shall issue a license for any cinematograph or similar apparatus until the applicant produces a license from the department of the provincial secretary.

14. In all cities, towns and incorporated villages, it shall be the duty of the chief constable or chief of police to enforce these regulations.

15. These regulations shall come into force the first day of December, 1911.

J. W. McLEOD,
Clerk Executive Council.

New Health Regulations for Montreal.

The new health by-laws now in process of preparation for the city of Montreal will, we are informed, render it possible for that city to condemn and demolish unsanitary rookeries, to prohibit sleeping in rooms without windows, to limit the number of persons who may live in a single room, and generally to enforce certain of the elementary principles of common-sense and hygiene. That is excellent; outsiders will wonder, points out a Montreal daily, why it was not done before, and Montrealers, remembering why it was not, will give thanks that it is possible to do it now.

Such a campaign of regulation should be supplemented by a campaign of construction. Many experts have pointed out the lines to be followed, and that there need be no loss, not even of fair interest on the investment, in the erection of sanitary workingmen's dwellings, provided they are wisely run. It is not perhaps a matter for a municipality as such, but it is distinctly a matter for those citizens who have the money to spare and the intelligence and public spirit to employ it in the general interest.

INTERNATIONAL

ADVANCE NOTICES.

Fifteenth International Congress of Hygiene and Demography, Washington, D.C., last week of September, 1912. J. W. Schereschewsky, Director. *Fourth International Congress of School Hygiene*, Buffalo, in the summer of 1913—particulars later. *Conjoint Meeting, International Association of Medical Museums and International Congress of Medicine*, London, England, in the summer of 1913. Particulars later. Dr. Thornfield and Dr. Woodwark, of St. Bartholomew's Hospital, and Dr. Kettle, of the Cancer Research Hospital, Local Secretaries. *Fifteenth International Sanitary Congress of American Countries*, Santiago, Chili, November, 1912. Dr. Alexander De Rio, President. *Far Eastern Association of Tropical Medicine*, second biennial congress, Hong Kong, China. January 20th to 27th, 1913. Under the presidency of Dr. J. Mitford Atkinson, Hong Kong; Dr. Francis Clark, Secretary-Treasurer General, Hong Kong. *International Congress on Tuberculosis*, Rome, April, 1912. *International Red Cross Conference*, Washington, D.C., May 7-15, 1912. Dr. C. R. Dixon, Secretary, 192 Bloor St. West, Toronto, Ontario. *International Eugenic Congress*, London, England, July 24-30, 1912; address the Honorable Secretary, 6 York Buildings, Adelphi, London, England. *Seventeenth International Congress of Medicine*, London, England, summer of 1913; further particulars of this Congress will be given later. Honorary General Secretary, Prof. H. Burger, Vondelstraat, Amsterdam. *League of American Municipalities*. The next convention of the League of American Municipalities will be held in Buffalo, N.Y., and in 1913 it will likely be held in Winnipeg. *American Public Health Association*. Among the subjects to be discussed at the 39th annual meeting of the American Public Health Association, from the 5th to 9th of this month, December, are Asiatic cholera, the hookworm disease, tuberculosis, pellagra, infantile paralysis, typhoid fever, Mexican typhus, and hospital construction and management. Reports of various committees on standard methods for the analysis of water, milk, sewage, and the bacteriological diagnosis of tuberculosis, typhoid and kindred diseases, will be presented. Headquarters of the association will be at the Hotel Seville. The meetings will be held in the rooms of th Ateneo and Circulo de la Habana. Through the courtesy of the residents of Havana, a programme of entertainment has been provided, arranged, however, with due regard to the business meetings of the association. The social features include a visit to a tobacco plantation, a banquet at the National Theatre, a picnic on the grounds of the Tropical Brewery, a Spanish-Cuban verbena at the Hotel Seville, a trip to Morro Castle, and a visit to the wreck of the battleship Maine. Dr. W. C. Woodward, General Secretary, Washington, D.C.

Clinical Congress of North American Surgeons.

Some 2,500 surgeons from all over the North American continent gathered in Philadelphia last month at the Clinical Congress of Surgeons of North America.

Dr. Albert J. Ochsner, of Chicago, retiring president of the Congress, made a plea for what might be called free trade in clinical methods and for the abolition of prejudice, provincialism and personal conceit. He said the present age has made great strides towards efficiency. Merchants, manufacturers and financiers have achiev-

ed direct results by the sacrifice of personal conceit and by the use of good judgment, he added, and practical results in the profession have been marvellous.

Dr. Ochsner advocated a system of study on the part of surgeons, advising them to take a certain part of each year to visit clinics in various parts of the country. He stated it was with some such idea in view that the Congress was organized last year and already has proven successful. He suggested the development of a plan to utilize the resources which have been discovered, and advocated the organization in various cities of surgeons' clubs where the members could gather and compare notes.

Dr. Edward Martin, Professor of Surgery at the University of Pennsylvania, was elected President of the Clinical Congress for the ensuing year. In 1903 Dr. Martin was appointed director of public health and charities in the city of Philadelphia, but was compelled on account of private practice to resign this position in October, 1905.

Dr. G. E. Brewer, of New York, was elected vice-president; Dr. Frank Martin, of Chicago, general secretary; Dr. A. D. Ballou, business manager, and Dr. B. Renavel, of Chicago, treasurer.

International Sanitary Congress.

Advocating publicity instead of suppressing or concealing the facts is a policy which is finding favor with most of those engaged in combating contagious diseases. This policy had the hearty approval at the International Sanitary Conference opened last month in Paris under the official sanction of the French Government. The distinct purpose of the conference was to urge nations to make public the existence in their territory of diseases of the character mentioned, to improve the medicinal service on steamship lines and to induce steamship companies to observe stricter sanitary measures on vessels. With better international co-operation in such directions undoubtedly much more might be done to lessen the prevalence of disease.

American Association of Farmers' Institutes.

The sixteenth annual meeting of the American Association of Farmers' Institute Workers was held in Columbus, Ohio, November 13, 14 and 15. Among the reports of standing committee being:

Institute Organization and Methods — G. A. Putnam, Toronto, Ontario; J. H. Cannell, Stillwater, Okla.; W. C. Latta, Lafayette, Ind. Discussion.

Institute Lecturers — B. Walker McKeen, Fryeburg, Me.; D. M. Working, Washington, D.C.; F. S. Cooley, Bozeman, Mont. Discussion.

Co-operation With Other Educational Agencies — G. C. Creelman, Guelph, Ontario; K. L. Butterfield, Amherst, Mass; R. A. Pearson, Albany, N.Y. Discussion.

Movable Schools of Agriculture — L. R. Taft, East Lansing, Mich; L. A. Merrill, Salt Lake City, Utah; A. L. Martin, Harrisburg, Pa. Discussion.

Boys' and Girls' Institutes — F. H. Rankin, Urbana, Ill.; Val Keyser, Lincoln, Uebr,; A. D. Wilson, St. Paul, Minn. Discussion.

Women's Institutes — Miss Martha Van Rennselaer, Ithaca, N.Y.; Miss Laura Rose, Guelph, Ontario; Mrs. F. L. Stevens, Raleigh, N.C. Discussion.

Other subjects for discussion were: "What plan for 'following up' institute instruction can be adopted that will secure the introduction of better methods into farm practice?" "Should at least one common topic be agreed upon for discussion in every institute in the United States and Canada during the coming year?" "What number of lecturers should the state or provincial director furnish for each institute, and how much of the day's programme should these lecturers supply?" "What proportion of the 'state' appropriation should be used for local expenses?" "Is it advisable and feasible for the county institute to hold meetings quarterly or monthly throughout the year?" "What is the most effective method for conducting an agricultural instruction train?" "Should the institute systematically conduct field, orchard, household and kindred demonstrations? If so, how should the work be organized?" "Should the institute, for demonstration purposes, organize and conduct fixed vocational schools of agriculture for men and schools of domestic science for women? If so, how long should each continue, and what should the course include?" "How should the central department of institute

control in a state or province be organized to secure the highest development of the work?" "What are the respective duties and proper relations of the state or provincial director and local manager in a well organized system of institute work?" "What should be the leading purpose of the annual round-up institute, and what the character of the programme to accomplish that purpose?" "What should be the character of the state or provincial director's annual report?"

UNITED STATES

ADVANCE NOTICES.

United States National Irrigation Congress. The Nineteenth National Irrigation Congress convenes in Chicago, Dec. 5, and its deliberations will continue to and including Dec. 9.

University of St. Thomas.

A new university has been founded by the United States in the Philippine Islands. There was already a University of St. Thomas, founded by the Spaniards in 1611, but it was thought that this old institution did not meet modern requirements. The new university comprises a College of Medicine and Surgery, which was opened in 1907, besides Colleges of Veterinary Science, of Agriculture, of the Liberal Arts, of Law and Political Science, and of Engineering. The teaching of pharmacy is to be provided for under the head of the Liberal Arts. No provision for instruction in dentistry has yet been made. The seat of the new university is Manila. A clause of the Act founding the university is to the following effect: "No student shall be denied admission to the university by reason of age, sex, nationality, religious belief, or political affiliation."

Proposed Hygiene Bureau.

Is not the health of the 20,000,000 school children of the United States as important as that of the live stock of the country? United States Commissioner of Education Claxton puts the query in his annual report, just issued, to Secretary of the Interior Fisher, at the same time recommending the appointment in the Bureau of Education of a specialist in school hygiene and sanitation, with assistants and clerks to aid him in the work.

Dr. Claxton declares his bureau should have more opportunity to study the needs of rural schools, which problem, he says, "is admitted to be the most difficult of all school problems." Industrial education, he contends, also should be studied by a group of competent field specialists and assistants "to help toward the formulation of some clearly understood fundamental principles."

Tennessee and Pelagra.

A special pellagra report, for distribution among physicians, scientists and investigators, has just been issued by the Tennessee State Board of Health. The report shows that there are now 2,500 cases of the dread malady in that state, and that its spread has been rapid.

A feature of the booklet is the report of the pellagra commission, which was recently published, showing the personal investigation of 316 cases. This report is accompanied by what are said to be the best photographs of pellagra patients ever obtained in the United States. It also contains a map showing the relation of the disease to the principal streams, watersheds, highways of travel, and proximity of cases to each other. The majority of the cases were found outside corporate towns, as the map indicates.

In its investigation of pellagra, Tennessee is said to have taken more advanced steps than any other commonwealth.

The foreword to the report follows:

"It should be borne in mind that the 316 cases hereinafter referred to include only such cases as were personally visited by the several members of the commission.

"Including the 316 cases seen by the pellagra commission, together with such cases as have from time to time been reported by the county and city health officers, there are now approximately 2,500 cases of pellagra in Tennessee.

"In view of the fact that the state board of health has in preparation a treatise on

pellagra, explaining its nature, its history in Europe and in this country, theories as to its cause, and the manner in which the disease develops in a patient, so that the public can familiarize itself with the symptoms and understand the disease and cooperate with their physicians and health authorities for its prevention, this commission has not deemed it necessary to refer to this feature of the situation.

Question of Antitoxin Before the Conference of New York Sanitary Officers.

Dr. Simon Flexner, director of the Rockefeller Institute, speaking before the recent conference of New York Sanitary Officers, reviewed the history of the institute's work with the serum for epidemic cerebro-spinal meningitis, recapitulating what had been done by the institute for the last three or four years in the development of this serum, which has been recognized for a year or more as an effective measure against the epidemic form of meningitis. As such it was turned over to the Board of Health of the city last February. Dr. Flexner said that the institute was now working on the serum for influenza meningitis and that the work had reached a satisfactory experimental stage. This serum has not yet been applied in cases of human beings.

Dr. W. S. Magill, director of the state hygienic laboratory, said that physicians should be more careful to follow directions in the use of the diphtheria anti-toxin. In France, where the diphtheria anti-toxin is widely used, the diphtheria mortality is three in 100,000, whereas here it is 16. More general and quicker use of the anti-toxin would help to reduce this death rate in the United States.

THE EMPIRE AND THE WORLD ABROAD

ADVANCE NOTICES.

Pure Food and Health Society Congress of Great Britain, London, England, March, 1912. Particulars later. *Congress of the Universities of the Empire*, London, England, July 2nd, 3rd, 4th and 5th, 1912. Fifty-one universities have arranged to send representatives; and among the questions proposed to be discussed by them are the following: University Organization; Universities in Their Relation to Teachers and Undergraduate Students; Universities in Their Relation to Post-Graduate Research Work; Universities in Their Relation to Schools and to Agencies for Higher Education. Other subjects for discussion will probably be: Whether any Common Understanding Will be Possible Among the Universities of the Empire as to the Extent to Which They Could Recognize Each Others' Entrance Examinations; The Desirability of Increased Facilities for Post-Graduate Study; The Possibility of Some Plan of Interchange of Professors; What Could be Done by Universities in Regard to After Careers of Students, and the whole question of the Financial Support Given from Public Sources to Universities. Inquiries with regard to the Congress should be addressed to Dr. R. D. Roberts, at the Congress Office, University of London, South Kensington, London, England. *Royal Institute of Public Health.*—The Council of the Royal Institute of Public Health have accepted an invitation from the Chief Burgomaster of Berlin to hold their 1912 Congress in that city, from Thursday, July 25, to Sunday, July 28, inclusive. A Local General Arrangements Committee has been formed consisting of representatives of the Royal Ministry of the Interior, the Imperial Board of Health, the City of Berlin, the medical officers of the Headquarters Staffs of the Army and Navy, the University of Berlin, the medical and hygienic societies of Berlin, and other societies, to promote the success of the meeting. The Congress will be under the presidency of Lord Beauchamp, His Majesty's First Commissioner of Works, and will be conducted in the following sections: State Medicine, President, Sir T. Clifford Allbutt, Regius Professor of Medicine in the University of Cambridge; Bacteriology and Comparative Pathology, President, Professor G. Sims Woodhead, Professor of Pathology in the University of Cambridge; Child Study and School Hygiene, President, Sir James Crichton-Browne, Lord Chancellor's Visitor in Lunacy; Military, Colonial, and Naval, President, Major Sir Ronald Ross, Professor of Tropical Medicine in the University of Liverpool; Municipal Engineering, Architecture, and Town Planning, President, Mr. P. C. Cowan, Chief Engineer of the Local Government Board, Ireland. Facilities will be afforded for visits to be made to the various public health and educational institutions in Berlin and other places.

Sir George Newman's Report.

A State cannot effectually insure itself against physical disease unless it begins with the children.

Starting out with this general proposition, the chief medical officer of the local Board of Education of England and Wales, Sir George Newman, in his annual report just issued, traces the effects of the medical inspection which now play so important a part in school life. The obligatory organization of medical inspection dates from the beginning of 1908, and the actual machinery itself is now fairly complete, but it is pointed out that the effect of ameliorative work has not had time to show itself in the returns of existing disease, ailment, or defect. The amount of leeway yet to be made up may be gathered from the official statement that out of the 6,000,000 elementary school children in England and Wales—

10 per cent. suffer from defect in vision.

3 to 5 per cent. suffer from defective hearing.

6 to 8 per cent. have adenoids, or enlarged tonsils, or sufficient degree to obstruct the nose or throat and thus to require surgical treatment.

40 per cent. suffer from extensive decay of the teeth.

30 to 40 per cent. have unclean heads or bodies.

1 per cent. suffer from tuberculosis in readily recognisable form.

1 to 2 per cent. are afflicted with heart disease.

Moreover, a considerable percentage of children are suffering from a greater or less degree of malnutrition. The chief medical officer points out: "It cannot be doubted that in the aggregate this formidable category of disease and defects means a serious amount of suffering, incapacity, and inefficiency, which at least must greatly limit the opportunity and diminish the capacity of the child to receive and profit by the education which the State provides."

The moral is obvious. As Dr. Newman says: "Every step in the direction of making and keeping the children healthy is a step towards diminishing the prevalence and lightening the burden of the disease of the adult, and a relatively small rise in the standard of child health may represent a proportionately large gain in the physical health, capacity, and energy of the people as a whole."

Are the local authorities doing their part? Many of them, Dr. Newman reports, are proving themselves fully equal to the occasion and the task, and though unwilling to burden the local rate, they are grappling with the situation with zeal as well as moderation and good sense. "It must be admitted, however, that in respect of both means and methods the way is difficult and hard," he adds, "partly because there is at present no Parliamentary grant in aid of this work and partly because of the complexity of the issues which are raised in relation to treatment."

In the whole School Medical Service in England there are now just five short of 1,000 medical officers at work, of whom 79 are women doctors. In addition 335 nurses give their whole or part time to the work. In the reports of these local school doctors there is a mass of instructive and entertaining facts from which we cull the following:—

Among Halifax children who did not work out of school hours, the average height was 59.6in., weight 81.5lb.; while among children employed out of school hours the height was 54in., and weight 67lb.

Dealing with the treatment of enlarged tonsils, Dr. Forbes (Brighton thinks it should be a routine practice before the children commence breathing exercises that a "handkerchief parade" should be held. The number of children coming with handkerchiefs would increase.

Seventy authorities have sanctioned expenditure on spectacles for scholars. Last year £1,000 was spent under this head.

In a number of schools there are regular tooth-brush drills, each child being provided with a mug, tooth-brush and tooth powder.

At Wolverhampton the children are taught to wash themselves, to care for their hands and nails, to brush their hair, to mend their clothes, to wash dirty pinafores, to eat nicely and daintily, as well as many other matters of great value to them in every-day life.

An elaborate scheme of "mothercraft" teaching is carried out in a Tottenham school, the course including the washing and dressing of a baby doll, preparing and cleaning of clothes, cutting out and making clothes and other home-life matters. The

girls are shown how a banana crate can be converted into an excellect baby's cot.

Although it is usually found necessary to make use of a doll for demonstrations, it has been found possible in a fair number of cases to arrange for the children to see, even if they cannot actually participate, in the washing, dressing and feeding of a real baby. At Bradford there are evening classes for mothers with their babies, conducted by trained nurses.

Boys who turn up at Wolverhampton schools with dirty faces and hands are sent to the lavatory to wash. The teachers call attention to torn clothing, missing buttons and unclean boots. In one school, as the result of the cleansing reform the number of scholars wearing collars, originally only 5 per cent., was increased to 80 per cent., and this without compulsion.

"Many of the teachers are enthusiasts, and the amount they do for the children is astonishing. These are a combination of health visitors, school-nurse, and boot club."—From report of School Medical Officer of West Riding.

Shower baths for elementary schools have recently been sanctioned in nine cases. The bath is usually available for all children and avowedly forms part of the training of the child, and is supervised by the teaching staff. As a rule, the children are bathed once a week.

Dr. Hawkes examined 1,581 children attending three schools of the poorer classes for "flat-foot." He found 65.4 of the boys, and 64. of the girls were affected to a greater or less degree. In 28.8 per cent. of the boys and 31.7 per cent. of the girls the second stage of true flat-foot had been reached. The defect, it was discovered, becomes more marked during periods of sudden increase in stature or height.

Excluding London, the number of meals provided for necessitous children has fallen from 8,766,625 to 7,734,242. In London the total number of meals increased from 7,300,000 to ,100,000.

Committee for Aiding the Blind in France.

At the suggestion of the *Committee for Aiding the Blind in France*, there has just been established in that country a commission of specialists who are to study the relations of illumination to health. Half a dozen lines of research have already been outlined by the commission, among which may be noted the investigation of ocular hygiene with relation to general health, taking into consideration the various means of lighting in actual use. The hygienic qualities of different illuminants will be investigated and determined, including such items as eye-strain, noxious gases and development of heat. The work will be continued towards the determination of the minimum quantity of light compatible with the normal functioning of the eye, incidental to which will be the establishment of rational standards of luminosity and practical ways of measuring them. Some attention will be paid to the matter of special kinds of illumination suitable for different lines of work, and, in conclusion, the commission will seek what light it can get on the causes of myoma and discuss possible means of prevention.

Austrian Prophylactic Society.

A society for the prevention of diseases and epidemics (Gesellschaft zur Bekaempfung von Volksseuchen) has been founded in Austria which will act in concert with the Public Board of Health and the Sanitary Department of the Ministry of the Interior. Its aims are to supplement the endeavors of the public authorities in combating diseases, to improve the general circumstances of patients and their families belonging to the poorer classes, to provide adequately trained attendants for the care and nursing of patients during epidemics, and to organize medical help and hospital accommodation in non-epidemic times. The society will also encourage investigation relative to the spread of diseases, as well as their prophylaxis and treatment, and will, so far as possible, make the general public acquainted with the results of these scientific researches. The society will endeavor to improve the knowledge, not only of the so-called epidemics, but also of all diseases which prevail extensively. The present intention is that the scientific part of the work shall be divided amongst all practitioners in the country through the instrumentality of the local medical unions and councils. It is thought possible that an international society for the study of epidemic diseases may in the course of time be called into existence.

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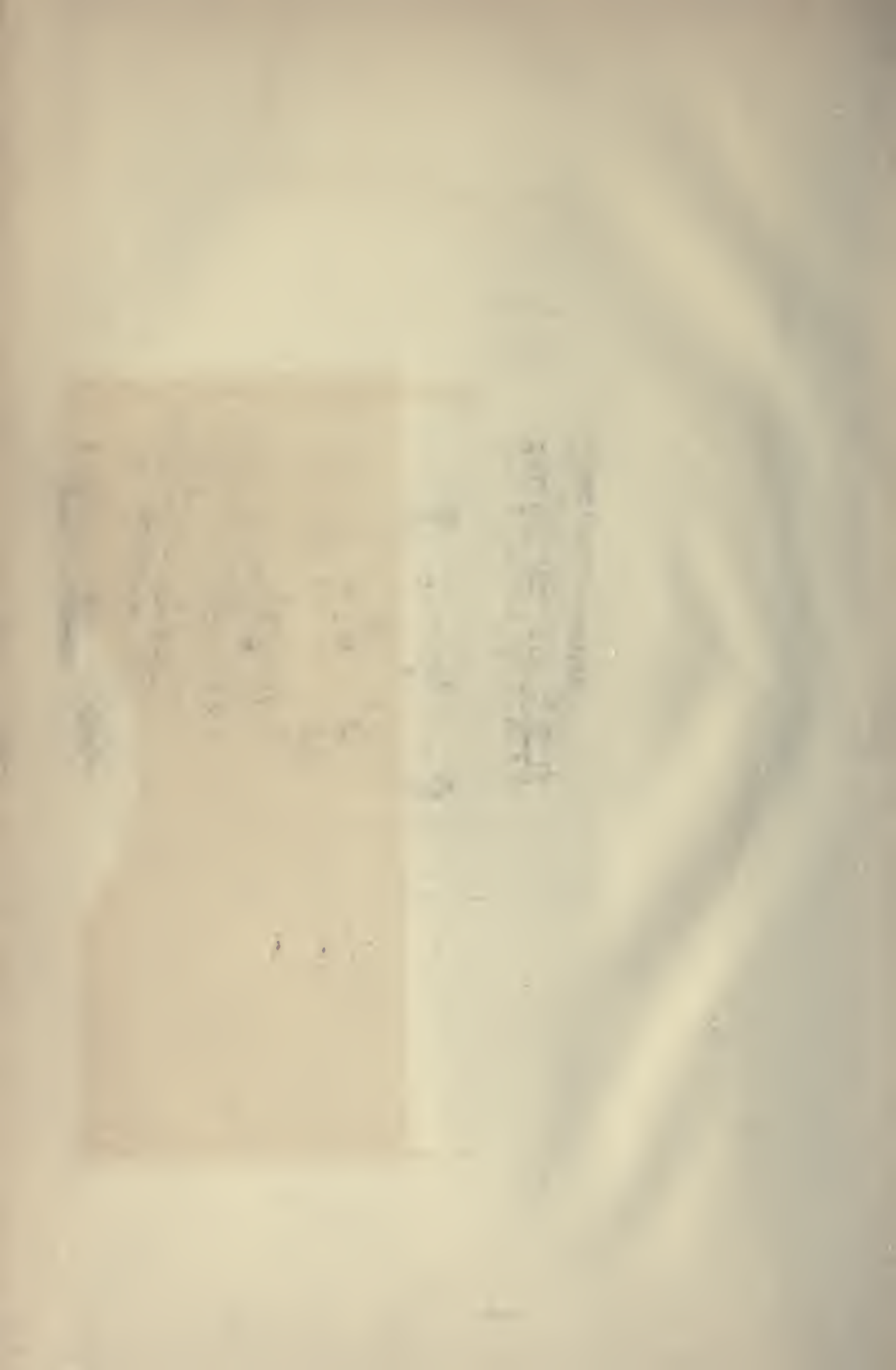

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